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ABSTRACT

This report focuses on the supply, distribution of, and requirements for nursing. The first chapter describes the supply of registered and licensed practical nurses. Characteristics of the overall nursing supply are discussed in terms of marital status, age, and employment patterns. Data are also provided on nurses newly licensed to practice, males, and minorities. Projections are made of the supply of registered and licensed practical nurses. Chapter 2 reexamines two approaches for determining requirements for registered nurses: the historical trend-based model that identifies the impact of health system changes on requirements and the criteria-based model that is designed from the development of health care goals. The two sets of requirement projections are compared with four sets of supply projections based on alternative assumptions about the number and types of graduates that might be available. Recommendations are made in chapter 3 for the role of the federal government in support of nurses training and for advanced preparation in nursing. Appendixes, amounting to approximately one-third of the report, include 41 data tables and a list of references. (YLB)

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NURSE SUPPLY, DISTRIBUTION AND REQUIREMENTS

3RD REPORT TO THE CONGRESS

FEBRUARY 17, 1982

NURSE TRAINING ACT OF 1975

Third Report of the Secretary of Health and Human Services
to the Congress as required by Section 951, Title IX,
Nurse Training Act of 1975, Public Law 94-63,
as amended by Section 12(h), Public Law 95-623

DHHS Publication No. HRA 82-7

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE • HEALTH RESOURCES ADMINISTRATION
BUREAU OF HEALTH PROFESSIONS • DIVISION OF NURSING
HYATTSVILLE, MARYLAND 20782

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EXECUTIVE SUMMARY

This third report on the supply and distribution of and requirements for nurses is submitted pursuant to Section 951, Title IX, Nurse Training Act of 1975, Public Law 94-63 as amended by Section 12(h), Public Law 95-623. The report is due to the Congress October 1, 1981 and has been prepared at a cost of $ 435,176.

Although the number of nurses in active practice has increased, there is mounting evidence to document the existence of a nursing shortage in all types of patient care settings.

Registered nurses are a vital part of the Nation's health care delivery system and constitute the largest single group of health care providers. As of September 1977, an estimated 1,401,633 persons held current licenses to practice, and 70 percent of this number were active participants in the nursing work force. An additional 3 percent were actively seeking nursing employment, a rate well below that for the U.S. labor force. Of the 27 percent who were neither working nor seeking employment, 27 percent were over 60 years of age and 19 percent were between 50 and 60 years of age.

Data from the 1977 National Sample Survey of Registered Nurses indicate that registered nurses in younger age groups are remaining active in the work force for longer periods of time, even during the child-rearing years. Moreover their employment rate is higher than that for their non-nurse counterparts in the labor force. However, nurses in older age groups whose retirement plans have reached maturity are leaving the work force at an earlier age. This report describes characteristics of the overall nurse supply in terms of marital status, age, and employment patterns, together with data on nurses newly licensed to practice. Information is also included on males and minorities in the work force.

Graduates from the three types of programs preparing for registered nurse licensure are the principal source of new additions to the nurse supply. For the academic year 1979-80, the total number graduated was 75,523, a decrease of approximately 1,625 from the preceding academic year. Small increases in the number of graduates from associate degree programs were insufficient to offset continuing decreases in the number of graduates from hospital-based diploma programs.

Graduates of foreign schools of nursing account for a relatively small portion of additions to the nurse supply. Regulations published in the Federal Register by the Immigration and Naturalization Service now require nonimmigrant nurses to possess a valid State license to practice nursing in the United States or to have successfully passed a screening examination in English language proficiency and in nursing given by the Commission on Graduates of Foreign Nursing Schools. Also, the Department of Labor requires immigrant aliens to pass that test in order to be certified for permanent employment in the United States. Use of the test has proved to be a reliable predictor of success in passing licensure examinations to practice as a registered nurse.

In addition to registered nurses, an estimated 715,000 practical nurses held licenses in 1980, of whom 77 percent were employed in nursing and 2.9 percent were unemployed. The number of programs preparing licensed practical nurses (1,318 in October 1979) has remained rather constant in recent years, but a slight decrease in the number of graduates occurred between 1975-1979. Projections to the year 2000 indicate a slow growth rate in the supply.

There are many dimensions to the shortage of nurses. There is an uneven geographic distribution of registered nurses among States and among counties within States. Inner cities and rural areas lack sufficient nursing services despite the fact that the number of nurse practitioners in rural areas has increased. Achieving a more equitable distribution of nurses is, however, dependent upon factors other than the willingness of the nurse to locate in underserved areas. There must also be employment opportunities in established health care delivery systems and provision for reimbursement to subsidize the cost of providing service. Distribution problems can also be viewed in terms of type of practice setting. Although more nurses are employed in hospitals than ever before, it is estimated that 80 percent of hospitals do not have an adequate supply of nurses. This report examines changes that have occurred in hospital nursing practice and summarizes data from recent studies regarding turnover of nurses in this practice setting.

Turnover is a significant problem in many acute care settings; it is costly to the institution and ultimately to the consumer and jeopardizes the quality and continuity of patient care. The causes are complex and interrelated. Dissatisfaction with professional working conditions is probably the single most important factor. Dissatisfaction stems from pressures in the hospital setting, inability to define and control nursing practice, lack of opportunity for professional growth, participation in decision making, and administrative support. Inadequate starting salaries and inadequate salary differentials for new and experienced staff have long been cited as a major factor contributing to turnover. However, findings from recent studies indicate that salary does not have a direct effect except as it becomes marginal to other determinants such as job satisfaction and the perception of recognition for a job well done. These problems cannot be solved by short term, stop gap remedies nor by relying on temporary nursing services. Solutions will require the concerted efforts of the health care industry and appropriate Federal initiatives to utilize appropriately nurses who are already in the work force. For example, a federally supported study is underway to document the effect of temporary nursing services on the supply of nurses, the quality of care, and the cost of providing nursing services.

The need for nurses in long-term care facilities is considered in the context of the characteristics of the nursing home population and the need for community health nurses as part of a national strategy to emphasize disease prevention.

Another concern is that the nursing work force be more representative of the population it serves. Data not previously available on minorities in nursing is included in this report.

Considering the characteristics of patient populations, both in institutional and community settings, and considering changes in practice resulting from the application of new knowledge and new technologies, it appears unlikely that the Nation's need for nursing services can be met by simply increasing the number of registered nurses.

As detailed in the report, the number of nurses prepared as expert clinicians in various specialties falls far short of the number needed for direct patient care. Schools of nursing lack sufficient faculty with the qualifications for teaching the number of students who will be needed to meet the demand for nurses during the next 20 years. In all types of practice settings, the number of well-prepared nurse administrators is insufficient to effect changes in the delivery of service to assure high quality care and, importantly, provide inducements for nurses to remain in practice.

Nurses are a national resource. Projections of supply and demand are necessary to determine whether the supply will be adequate not only in number but also in types of skills needed to respond to changes in the health care delivery system. This report includes supply estimates based upon four series of projections. With the exception of differences assumed for graduations and the effect of varying graduation rates on the total supply, the same set of assumptions was used for each of the four series. A conclusion common to all four series is the finding that the number of graduations by the year 2000 will be less than the number currently graduated and that the composition of graduates by type of preparation will differ as compared to earlier years.

Current data indicate that the supply of registered nurses in 1980 was overestimated in the Second Report to Congress, March 15, 1979 (Revised). The current estimate for the number of employed registered nurses as of January 1980 is 1,119,100 or 945,700 on a full-time equivalent basis. Based upon assumptions from the four series of supply projections, it is anticipated that there will be continued growth in the registered nurse supply over the next 20 years, although at varying rates. Projections for 1980 of the number of nurses with preparation at the graduate level proved to be underestimated. However, nurses with graduate degrees comprise only 5 percent of the total supply.

Two approaches used in the Second Report to the Congress for determining requirements for registered nurses have been reexamined for purposes of this report. One is an historical trend-based model which identifies the impact of health system changes on requirements. The other is termed the criteria-based model and is based upon the development of health care goals. The goals were originally established by the Panel of Expert Consultants appointed by the Western Interstate Commission for Higher Education and subsequently updated by a similar type group. Projections emanating from the latter model were somewhat larger than those from the historical trend-based model, due primarily to the criteria for requirements for registered nurse staffing in nursing homes and community agencies.

The two sets of requirements projections were compared with four sets of supply projections based on alternative assumptions about the number and types of graduates that might be available. The comparison of supply projections and historical trend-based requirements projections for registered nurses for 1990 indicates there is reasonable balance between the two. By the year 2000, however, requirements projections exceed the supply estimates in three of the four series of supply projections. The comparison of supply projections and the criteria-based requirements projections for the year 1990, the only year for which projections were made, shows that requirements would outstrip supply, with the most serious deficit occurring in the number of nurses with specialized advanced training.

Options for future Federal support for nursing education should be considered in the context of national health care priorities, changes in the health care delivery system, and constraints in Federal spending. States, the private sector, the profession, and individual nurses have important roles to play in assuring an adequate supply of well-prepared nurses. Federal support should be targeted to areas of pressing need by increasing the number of nurses prepared: (1) at all levels for direct patient care in acute care settings, in nursing homes, and in the community positions; (2) as primary care providers; and (3) for positions as faculty and administrators of nursing services. In addition, the proportion of minorities in the nursing profession should be increased.

There is a special need to overcome barriers to the full utilization of nurses in all practice settings. Studies are needed to document changes in patient outcomes as a result of nursing service; and to demonstrate and evaluate the utilization of nurses in various practice settings. These efforts will take time, but in the long run they hold promise for strengthening the capability of our nurse training system to meet patients' needs.

INTRODUCTION

This is the Third Report to the Congress in response to the statutory requirements in section 951 of Public Law 94-63 directing the Secretary of Health and Human Services to provide the Congress, on a continuing basis, detailed information on the supply and distribution of and requirements for nurses as well as on factors affecting supply and distribution. These data were to be used to determine the adequacy of the supply, from the standpoint of type and level of preparation, in relation to population needs and demand for nursing services. Section 951 further directed the Secretary to incorporate in reports to the Congress recommendations for legislation that would achieve an adequate supply and equitable distribution of nurses nationally and within each State. The annual reporting requirement in section 951 of P.L. 94-63 was subsequently amended by P.L. 95-623 to require biennial reports.

Information was requested in two general areas: (1) the supply and distribution of and requirements for nursing personnel on a current and projected basis, for the Nation as a whole and within each State, and the demand for the services which these nursing personnel provide; and (2) the number and distribution of nursing personnel within the United States and within each State according to educational levels, activity status, rates of compensation, specialty preparation, and migration data on nurses entering the United States from other countries. A copy of section 951 is included in appendix 1.

Fulfilling the reporting requirements proved to be a complex task. In terms of sheer volume, information had to be collected and analyzed on the 2.5 million nursing personnel who are employed in the health care system. Aggregate numbers are of less significance in determining adequacy of the nurse supply than are data on relatively small segments within the total supply. These data were examined and analyzed separately. The 2.5 million nursing personnel represent a range of competencies, from those with on-the-job training to those prepared for complex responsibilities in the management of patient care or the administration of nursing services. Moreover, they are distributed among a vast array of practice settings. Accordingly, an elaborate procedural plan was developed to acquire and analyze data to meet the statutory requirement. As a first step, the current status of existing sources of data collected on a regular basis by various agencies was identified to provide descriptive information or background essential for analytical interpretation. Where data were lacking, incomplete or in need of further refinement, the Division of Nursing intensified its efforts to develop new tools for analyzing nursing resources and requirements by initiating projects that would integrate analysis of data collected in a number of different ways and through a number of different sources.

The First Report to the Congress February 1, 1977 (USDHEW, Division of Nursing, 1977) relied, of necessity, on information that was already available, and it therefore dealt primarily with information on the supply and distribution of nursing personnel. Meanwhile, several studies with different approaches and objectives were undertaken to project requirements for registered nurses since this was a more complex issue than that of supply. One of the projects undertaken (by Vector Research, Inc.) was an assessment of the impact of three anticipated changes in the health care system: the introduction of national health insurance, the increased enrollment in health maintenance organizations, and the reformulation of nursing roles. The effect of these changes was examined on a State level as well as on a national level. A second project (System Dynamics National Model) approached supply and distribution from a national perspective through the analysis of factors affecting nursing requirements and resources and the interaction of each upon the other. Two other approaches were designed to develop techniques for determining requirement estimates to be used by groups at State or sub-State levels. The first of these (WICHE State Model) developed a systematic framework for determining the kinds of health care that might be needed as a basis for estimating requirements for nursing personnel. This framework was subsequently extended to produce nationally derived requirements estimates. A second approach to estimating requirements was intended for use at a sub-State level and consisted of a model incorporating demand and supply factors.

New models were also developed for making determinations of the anticipated nurse supply. These models had the capability to utilize data currently available and to incorporate new types of data as they became available. For purposes of analyzing the distribution of nursing personnel at a sub-State level, a model was developed to provide for a review of county data through a reallocation of registered nurse resources in terms of the population served. These activities made full use of data already in existence on supply and distribution of both nursing personnel and health care services. The methodologies for both the requirements and supply modeling efforts are fully described in the Second Report to the Congress March 15, 1979 (Revised) (USDHEW, Division of

Nursing, 1979).

The data from two requirements models were used to examine the relationship between supply and requirements in the Second Report. The models provided a wide range of projections for registered nurse requirements based upon the extent of change in the health care delivery system forecast in the models. These estimates were compared to two sets of supply estimates, one of which assumed discontinuance of Federal support for basic nursing education and the other, maintenance of current conditions and trends in Federal support. From an overall review of nurse supply and requirements, it was concluded in the Second Report (1979) that the aggregate supply of nurses would be roughly in balance with requirements in 1985. This conclusion was also based upon additional assumptions: (1) once a national health plan was enacted, a lead time of 2 or 3 years would be required for implementation, and phase-in of additional coverage and benefits might require several additional years; and (2) reformulation of nurses' roles would not increase to the extent anticipated in the model. If one or both of these assumptions proved correct, the rate of demand would be slowed.

The general conclusion that supply and requirements would be in balance was tempered by the acknowledgment that maldistribution might continue to exist in certain areas of the country, in certain practice settings, and among nurses with certain specialized training. Through work experience and advanced training, nurses prepare for practice in various sectors of the diverse health care delivery system. Those whose finely honed skills equip them for specialized intensive care units are not likely to perform with equal effectiveness in community settings where assessment of health status and management of care are prime concerns. Similarly, skills required for expert clinical practice are not necessarily those most pertinent to administration of nursing services in a medical center complex. Hence, aggregate supply of nurses is not the sole determinant of balance between supply and requirements. As shifts occur in the delivery of health care from institutional to ambulatory care settings, more nurses who are skilled in assessing health status and in helping individuals and families cope with the effects of illness and disability will be needed. Pressures to control escalating costs of hospital care are likely to encourage greater use of nursing homes, rehabilitation centers, and convalescent care facilities where nurses are the primary providers of care and by and large are responsible for the management of these facilities. Moreover, the increased use of sophisticated treatment modalities will dictate the need for nurses with advanced preparation in other specialized areas of practice such as trauma centers.

In order to fill the gaps in existing data sources and to examine more closely factors affecting nurse supply, distribution, and requirements, a study was designed and initiated for a national sample survey of registered nurses. This report contains findings from the first such survey, conducted in August 1977 (Roth, et al., 1978). It also includes data from the Inventory of Registered Nurses conducted in 1977 by the American Nurses' Association under contract from the National Center for Health Statistics (USDHEW, NCHS, 1978).

In addition to the studies that furnished information for this report, other studies approaching the same general issues from different points of view are in progress. The first of these is a study mandated by Section 113, Nurse Training Amendments of 1979 (P.L. 96-76), which required the Secretary to arrange for the conduct of a nursing study with the National Academy of Sciences acting through the Institute of Medicine (IOM). Three purposes are outlined for the 2-year study: to determine the need to continue a specific program of Federal financial support for nursing education; to determine the reasons nurses do not practice in medically underserved areas in order to develop recommendations for actions which could be taken to encourage nurses to practice in such areas; and to determine the rate at which and the reasons for which nurses leave the nursing profession and to develop recommendations for actions which could be taken to encourage nurses to remain or reenter the nursing profession, including actions involving practice settings conducive to the retention of nurses. In order to use this information in considering the nature and extent of future Federal support for nursing, the Congress required that the entity conducting the study report preliminary recommendations not later than 6 months after arrangements for the study had been concluded and a final report 18 months later. Both reports were to be accompanied by a similar report by the Secretary.

Delays were encountered in consummating the agreement between the Health Resources Administration, acting on behalf of the Secretary, and the IOM. Further, in view of the amount of work to be done in the 2-year study period, the IOM's request for a planning period was granted. The planning phase was completed on August 30, 1980, and a contract for the 2-year study was signed on January 12, 1981. The study design consists of three phases, the first of which is to be completed in August 1981 to fulfill the mandated 6-month reporting requirement. Phase II will require 12 months for completion, and the final report will be due 6 months thereafter, in January 1983. Although findings from the study are expected to assist the Congress in determining the future Federal role in support of nursing, they will not be available for inclusion in this report.

A second study, initiated by the Health Resources Administration and being conducted under contract by Abt Associates, is assessing the impact of nurse training authorities from 1964 through 1979 and examining the extent to which skills of nurses graduated from various types of programs are in accord with the needs of hospitals, nursing homes, and ambulatory care facilities. Since a final report is not expected to be available by the time this report is submitted, study findings cannot be incorporated in this report. In developing future legislative proposals in support of nurse training, the Department will, however, consider findings from these two studies as well as data included in this report.

Chapter 1

REGISTERED NURSE AND LICENSED PRACTICAL NURSE SUPPLY

Factors Affecting the Supply of Registered Nurses

This section describes the supply of registered nurses, incorporating information about those who enter the nursing work force as graduates of schools of nursing, both domestic and foreign, who are licensed to practice.[1] In addition to describing characteristics, employment status, and distribution of the nursing work force as a whole, special segments of the supply such as newly licensed and minority nurses are highlighted.

Graduations from Initial Nursing Programs

The primary source of additions to the supply of registered nurses is graduates from nursing schools located in the United States.

Three types of programs awarding different credentials prepare their graduates for licensure as registered nurses:

- Programs based in hospitals are usually 3 academic years or approximately 27 calendar months in length and lead to a diploma.
- Programs located, for the most part, in community colleges are 2 academic or calendar years in length and lead to an associate degree. A few programs leading to an associate degree are based in senior colleges or universities.
- Programs located in senior colleges or universities most often

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[1] No data is available on individuals who graduated from a school of nursing but did not take or pass the licensing examination, nor is data available on nurses who failed to renew their licenses. Consequently, this report deals exclusively with nurses who are licensed to practice.

lead to a baccalaureate degree. Baccalaureate programs are generally four years in length and are of two types: an integrated curriculum with nursing content throughout or an upper division, 2-year nursing-concentrated major following 2 years of prescribed study in liberal arts and sciences.

As of October 1980, there were 1,388 programs of nursing education preparing their graduates for licensure as registered nurses: 311 leading to a diploma, 697 to an associate degree, and 380 to a baccalaureate degree (NLN, 1981). These numbers document a trend in nursing education toward preparation in academic institutions, with a corresponding decline in the number of hospital-based diploma programs. The steady decline in the number of diploma programs from 900 in 1960 antedates passage of Public Law 55-851 (Nurse Training Act of 1964) and is the consequence of several social and economic factors. It reflects the preference of all students, including those whose career choice is nursing, for enrollment in programs that award academic credit. The decline is also attributable to the costliness of operating an educational program in a service agency in which income for the operation of the school is derived in large part directly or indirectly from patient revenues.

The number of baccalaureate programs has more than doubled in the same 20-year period, from 171 in 1960 to 380 in 1980 (NLN, 1980). These programs differ from diploma and associate degree programs in two significant respects: they prepare students to function as public health nurses in community settings as well as to provide service in institutional facilities and they provide the base for advanced study in a clinical or functional area.

The most dramatic increase, however, has been in the associate degree sector with a twelvefold increase in this same period of time. This growth was attributable in part to a conscious effort to make nursing education an integral part of the fabric of postsecondary education and to maintain the supply of nurses as the number of diploma programs continued to decline. Initiation of new nursing programs in community colleges has also contributed to meeting the social goal of putting nursing programs within the reach of individuals who could not undertake baccalaureate education either because of financial reasons or because of their need to remain in their home communities. In many areas, however, the number of schools and the size of enrollments grew disproportionately to the availability of clinical resources.

Since 1973, the overall number of programs has stabilized. This general pattern is expected to prevail for the foreseeable future, although shifts will continue to occur in the relative numbers of the three types of programs.

Changes in the number and types of programs are reflected in the number of graduates. Graduations from associate degree programs have increased significantly from 11,678 in the 1969-70 academic year to 36,034 in 1979-80. In the same 10-year period graduations from baccalaureate programs increased from 9,105 to 24,994, while graduations from diploma programs have declined from 22,856 to 14,495.

Three-quarters of the registered nurse population were estimated to have completed their basic nursing education in a diploma program. The proportion with diploma preparation, however, does represent a definite decrease from prior years, reflecting recent declines in the number of graduates of diploma programs compared to those from the two other types of programs.

The most significant trend since 1972 is the almost threefold increase in the number of associate degree graduates in the nursing work force due to the fact that major growth in the number of these programs occurred in the 1970's.

Since 1972, the number of graduates whose initial preparation was in baccalaureate programs has grown by 43 percent to constitute 14 percent of the registered nurse population.

Additions to the Nursing Population from Immigration of Foreign Nurses

Since World War II, nurses from other countries have been entering the United States in increasing numbers. In the late 1960's and in 1970, changes in immigration laws made it possible for more foreign-trained nurses to enter the country. The rate of immigration of these nurses was further stimulated by increased employment opportunities in this country. To meet their staffing needs, hospitals began professional recruitment of foreign-trained nurses. Consequently, for the first time in over 2 decades, data from State boards of nursing showed steady increases in the number of foreign-trained nurses licensed for the first time in the United States (USDHEW, 1976; Hiestand, et al., 1976).

This report presents data, available for the first time, on the overall number and characteristics of foreign nurse graduates licensed in the United States. Excluded from the data are foreign-trained nurses already in the country who have not yet passed the licensing examination and those who have repeated their basic preparation for nursing in this country and subsequently became licensed. Data from the 1977 National Sample Survey (Roth, et al., 1979) estimated that in September 1977, 52,436 nurses whose basic nursing education was received in a foreign country, were licensed in the United States. These nurses represented 3.7 percent of the nurse population.

The median age of foreign nurse graduates (40.6 years) exceeded that of their U.S.-trained counterparts (39.8). For 72 percent of foreign nurse graduates, a nursing diploma was the highest nursing-related educational credential; an associate degree was held by 3.5 percent, a baccalaureate by 20.9 percent, and a master's or higher degree by 3.6 percent.

Almost four-fifths (77.9 percent) of foreign nurse graduates were employed in nursing in 1977. The data reflected marked regional differences in the proportion of foreign nurse graduates overall. The Middle Atlantic and Pacific regions accounted for more than half (28.1 percent and 26.5 percent, respectively), while the East South Central States claimed the least. Due to the large number of active nurses, the percentage distribution of foreign nurse graduates employed in nursing by region showed a similar regional profile. It is probable that foreign nurse graduates tended to locate in regions where they were more likely to find employment opportunities and where higher concentrations of ethnic populations are found.

Characteristics of the Nursing Population

Newly Licensed Nurses

In describing the characteristics of the entire nursing work force, it may be useful to first examine the characteristics of newly licensed nurses. Although they represent a relatively small percentage of the total nurse population (approximately 4 or 5 percent) and their employment and mobility patterns differ somewhat from the supply as a whole, the data on this segment of the nursing work force are valuable in monitoring these nurses as they enter the work force and as useful trend indicators. Building upon the design of a study first conducted in 1973 under contract with the Bureau of Health Manpower (now Bureau of Health Professions), the National League for Nursing has been collecting annual data on the employment status, geographic mobility, and characteristics of newly licensed nurses. The study questionnaire is sent to all those who took and passed the licensing examination 6 months after licensure. Preliminary data from the 1979 Survey indicated that 95 percent of the respondents were employed in nursing and an additional 1.7 percent were not employed but seeking employment (NLN, 1979). There was little variation among graduates of the three types of programs preparing for licensure in terms of their employment status. Thus, 97 percent of the graduates of diploma programs reported that they were employed in nursing and 1.3 percent indicated that they were not employed but looking for employment. Of the graduates of associate degree programs, 94 percent indicated that they were employed and 2 percent reported that they were not employed but looking for employment. Ninety-six percent of the graduates of baccalaureate programs were already employed in nursing and 1.7 percent reported that they were not employed but looking for employment. Among the graduates of foreign schools of nursing, 90 percent were employed in nursing while 3.9 percent were not yet employed but seeking nursing employment. It is significant, however, that although a very high proportion of all newly licensed graduates were already employed in nursing, 14 percent were looking for other nursing employment. Of this proportion, graduates of baccalaureate programs accounted for 16 percent, graduates of associate degree and diploma programs, 12 percent, and graduates of foreign schools of nursing, 20 percent.

The extent to which the educational preparation of new graduates influences their choice of practice setting has been a topic of considerable interest. This is particularly true for graduates of baccalaureate programs since they are the only group of new graduates prepared to work in community as well as institutional settings. Under a contract awarded by the Division of Nursing, Bureau of Health Professions, Health Resources Administration, Abt Associates examined the relationships between nurses' clinical experiences during baccalaureate education, prenursing education employment experiences, prenursing educational employment preferences, and other factors relating to postgraduation employment, practice location, and specialty setting (USDHHS, Abt, 1981). Findings were based upon three separate surveys: a mail survey of a sample of 1979 graduates of accredited baccalaureate programs in the United States, a mail survey of all the accredited baccalaureate schools of nursing in the United States, and a telephone interview survey of a small sample of deans of these programs.

The study concluded that the work setting preference expressed before entering the nursing education program was the most important predictor of the graduates' subsequent choice of employment setting. For their first nursing position, however, nearly all (92 percent) of the recent graduates selected to work in inpatient hospital settings, three quarters of them in the same State in which they received their nursing education, and nearly half in the same city. The deans who were interviewed expressed the view that many graduates seek initial employment in general hospitals in order to gain experience and sharpen their skills. This view is confirmed by the responses of the new graduates themselves. Those who had gained considerable experience with inpatients during the senior year of their baccalaureate education were less likely to feel the need for additional employment experience with inpatients prior to employment in other settings.

Choice of initial practice location is not, however, a predictor of choice of future practice setting. Three out of four nurses in the study intended to change jobs within the next 3 years, primarily to move from acute care to nonhospital-based community settings. The majority of the respondents reported a willingness to consider employment in either a rural area or a low income section of a metropolitan area. Those who stated a preference for employment in such settings were more likely to have expressed such an interest before entering the nursing program, were more apt to be from upper-middle-class backgrounds, to have attended privately supported schools of nursing, and to have had greater amounts of nonhospital-based experience during their training. Students who chose to have experience in nonhospital-based settings were heavily influenced by faculty who served as role models. Although most programs offered experience in urban or suburban community settings, primarily public health centers, schools, or nursing homes, relatively few students (28 percent) were provided practice opportunities in rural areas. Schools attributed their inability to make use of rural practice settings to lack of faculty to teach and supervise students in areas geographically remote from the school and to high costs of transportation.

Findings from this study are consistent with results from other studies of graduates of programs leading to a baccalaureate degree in nursing. These graduates tend to work in settings that provide more opportunities for independence, self-direction, and initiative and tend to perceive hospitals and institutions as bureaucratic and restricting. A study by Knopf (1975), RNs One and Five Years After Graduation, is a case in point. Five years following graduation, only one-half of the graduates of baccalaureate nursing programs were employed in hospitals, in contrast to three-quarters of the graduates of associate degree and diploma programs who were working in hospitals.

Overall Nurse Supply

The National Sample Survey conducted in September 1977 estimated that 1,401,633 registered nurses were currently licensed to practice in the United States at that time, 70 percent of that number were employed in nursing, and 3 percent were actively seeking employment. This latter figure is slightly greater than the 1.7 percent unemployment rate for registered nurses reported by the Bureau of Labor Statistics for 1980 (USDOL, 1981).

Twenty-seven percent of the total nurse population were neither employed nor looking for nursing employment at the time of the survey. Among this group, approximately 27 percent were at least 60 years of age and about 46 percent were at least 50 years of age. The great majority of younger nurses in the group had children living at home, leading to the assumption they worked at home taking care of their families. Only 6 percent of this group were under the age of 50 and had no children at home. This latter group represented 1.4 percent of the total nurse population. Significantly higher activity rates were noted for those in the 30-34, 35-39, and 40-44 age groups and significantly lower rates were noted for those in the groups of nurses 55 years of age and older.

Many factors other than job availability determine whether nurses with current licensure are able or willing to remain in practice. Clearly, characteristics which apply to women in general, apply to nurses as well. The majority (72 percent) of registered nurses were married; 5 percent were widowed and 8 percent divorced or separated. Fourteen percent reported never having been married. Employment rates in nursing varied according to marital status, with the highest rates reported by nurses who were single, divorced or separated (85 percent), and the lowest by those who were married (66 percent) or widowed (54 percent).

The National Sample Survey showed an estimated 26,991 of the 1,401,633 nurses licensed to practice were men. While the number of men licensed as nurses has almost doubled since 1972, their relative proportion within the total nurse population reflected only a slight increase in the current survey, from 1.3 to 1.9 percent. A higher proportion (77 percent) of male registered nurses were employed in nursing than their female counterparts (70 percent).

For married women, ability or willingness to practice as a nurse was also found to be influenced by childrearing responsibilities. Half of the registered nurse population (50.8 percent) reported having children under the age of 17 in the household. Seven percent had children 1 year of age or younger, 17 percent had children between 2 and 5 years of age, and 39 percent had children between the ages of 6 and 17. Approximately 58.5 percent of the nurses who had children under 1 year of age were employed in nursing, in contrast to 71 percent of those who had no children in that age group. The employment rate was slightly higher (64 percent) for those with infants. This is in contrast to findings from a Current Population Survey conducted in June 1977 (USDOL, BLS, 1981) which indicated that an estimated 35.1 percent of all women with children less than 5 years old were employed, 5.3 percent were looking for work, and the remaining 59.6 were not in the labor force. The employment rates were the same as for nurses with children between the ages of 6 and 17 as for those without children in that age grouping. These findings are consistent with data on activity rates for nurses by age group and confirm that nurses tend to drop out of the work force to care for young children and reenter practice once their children have reached school age. In the 1972 and earlier BLS surveys, there was a decline in the proportion of employed nurses in the 25- to 39-year age group. However, the 1977 BLS data indicate that nurses in the younger age groups remain active in nursing longer, which may reflect the growing tendency among the female population as a whole to postpone marriage and childbirth or to combine motherhood with gainful employment.

Age is also a factor in determining work force participation. The median age of the nurse population in the 1977 BLS survey was 39.5 years. There was a marked difference between the median age of nurses who were employed (37.7) and those who were not (46.1). Slightly more than one-fourth (27.4 percent) of employed nurses were under 30 years of age and two-thirds were less than 45. The data also revealed that nurses are retiring at earlier ages. In 1972 the activity rate for nurses 65 years of age and older was 43 percent; in 1977 it had declined to 19 percent. Availability of financial assistance for retirement in the health care industry is a fairly recent occurrence, and the marked change in the proportion of older nurses who are working may indicate that retirement plans are now reaching maturity for a sizeable group of the nursing work force.

Salaries for nurses have improved significantly over the last 20 years, but the extent to which they are a compelling inducement to remaining in the work force is open to question. There is, of course, considerable difference between salaries according to employment setting, position level, and geographic location. The 1977 National Sample Survey indicated that for the nurse employed on a full-time basis in a hospital as a general duty staff nurse, the average monthly salary was $1,021 or $12,252 annually. There was little statistical difference between the median family income for those employed in nursing in comparison to those not employed in nursing. For married nurses, the total family income was almost double that of nurses who were single, divorced, separated or widowed. Although the median family income of those who were married was larger than for the nursing work force as a whole ($23,005 as opposed to $19,889), the median family income of employed married nurses was $23,402, as opposed to $21,910 for those who were married and not employed. Given the fact that there is relatively little difference between the median family income of employed and unemployed married nurses, one cannot conclude that salary alone is the decisive factor in a married nurse's choice to remain in the work force. It is possible that the most significant factor in the decision to remain in the work force is the income of the spouse relative to total family financial need rather than the relative value of the salary of the working married nurse. This suggests that there are nurses working out of a perceived financial necessity as well as out of interest in pursuing a professional career.

With little salary differential provided for experience, demonstrated skills, or education, coupled with generally narrow or compacted pay scales, the economic incentive for nurses to continue employment over time is open to question. Surveys of women's participation in the labor force are relevant to this hypothesis (Brown, 1980; Strober and Weinberg, 1980). Based upon a number of studies, a Stanford University economist concluded that, with the exception of child care, employed women do not substitute market goods and services for their own household production to any greater extent than do home workers (Strober, 1980). Other studies have found that the husband's hourly wage was a more significant predictor of the use of paid household help than was the wives' earnings (Walker and Woods, 1976; Stafford and Duncan, 1977; Robinson, 1977). Because a considerable amount of the married nurses' salaries are consumed by the costs of working and because of the numerous presures resulting from filling a dual role, families with employed wives are not necessarily better off than families in which the wife is a full-time homemaker.

Despite the fact that the total number of nurses has increased over the last decade and the number of nurses working in nursing has increased as well, there are persistent and widespread reports of a nursing shortage. According to testimony provided by the American Hospital Association, 80 percent of the Nation's hospitals and nursing homes cannot employ the number of nurses they need to fill a reported 100,000 nursing vacancies ("The Nurse Shortage ...", 1980). A problem of this dimension can be explained only by examining a number of complex and interrelated factors.

It is well known that the intensity of nursing care that patients require has increased substantially in response to advances in science, medical technology, and treatment modalities. These changes have made hospital nursing practice increasingly stressful. In the absence of compensation for pressures in the work setting, nurses move from one institution to another, or from hospital nursing practice to another field of nursing to find some level of professional and personal fulfillment. The resulting high turnover rates are a clear measure of dissatisfaction with practice in hospital settings. Although no national study has been done, it is estimated that approximately 25 percent of all nurses drop out of the work force temporarily (AJN, 1980), and there is a growing body of literature indicating that turnover, rather than inactivity, may be a more serious causative factor in nursing shortage.

Turnover, or the voluntary withdrawal from organizations by employees, is inevitable in all industries. In reasonable proportions, it has a salutory effect in weakening traditional operating procedures and paving the way for innovation (Price and Mueller, 1979). In nursing, however, the rate of turnover is, in many instances, excessive, ranging from 37 to 67 percent (Weisman, 1981), jeapordizing the quality and continuity of patient care and threatening the effectiveness and productivity of the hospital. Although most nurses who resign do not leave the nursing labor force, high turnover rates constitute morale and monetary problems for the health care industry.

Two groups of factors are consistently identified in literature dealing with nursing turnover--job context and job content. Job context includes remuneration (salary and fringe benefits), opportunity for growth (clinical or administrative advancement and institutional commitment of time and money for professional development), organizational structure (work schedules, workload and type of nursing organization and assignment), and administrative support (organizational policies and responsiveness of nursing administrators). Job content includes three factors--autonomy, interpersonal relationships and job status. Autonomy is the control permitted one to define and initiate changes in one's practice and to make full use of one's abilities. It also includes the nurse's participation in nursing service management such as decisionmaking in establishing standards for nursing care and institutional policies and procedures. Interpersonal relationships include teamwork with peers as well as with the medical and administrative staff. Job status is characterized by perceptions of recognition from one's co-workers, patients, and the public. Factors comprising job context are considered to be important in drawing nurses to a job; those comprising job content are responsible for keeping a nurse in a given employment setting and affecting performance.

Over the past decade the importance of these factors on job satisfaction and hence on reducing the likelihood of leaving a job setting has been the subject of numerous research studies. Job satisfaction has been defined as the "degree of positive affect toward the overall job or its components" (Weisman, 1980). Although job satisfaction in determined by the characteristics of the individual as well as by characteristics of the job and the work setting, most of the studies have focused on elements over which management has control. One study correlated job satisfaction with opportunity to use one's ability and to practice in an environment relatively free of stress (Seybolt, 1978). Another, (Weisman,

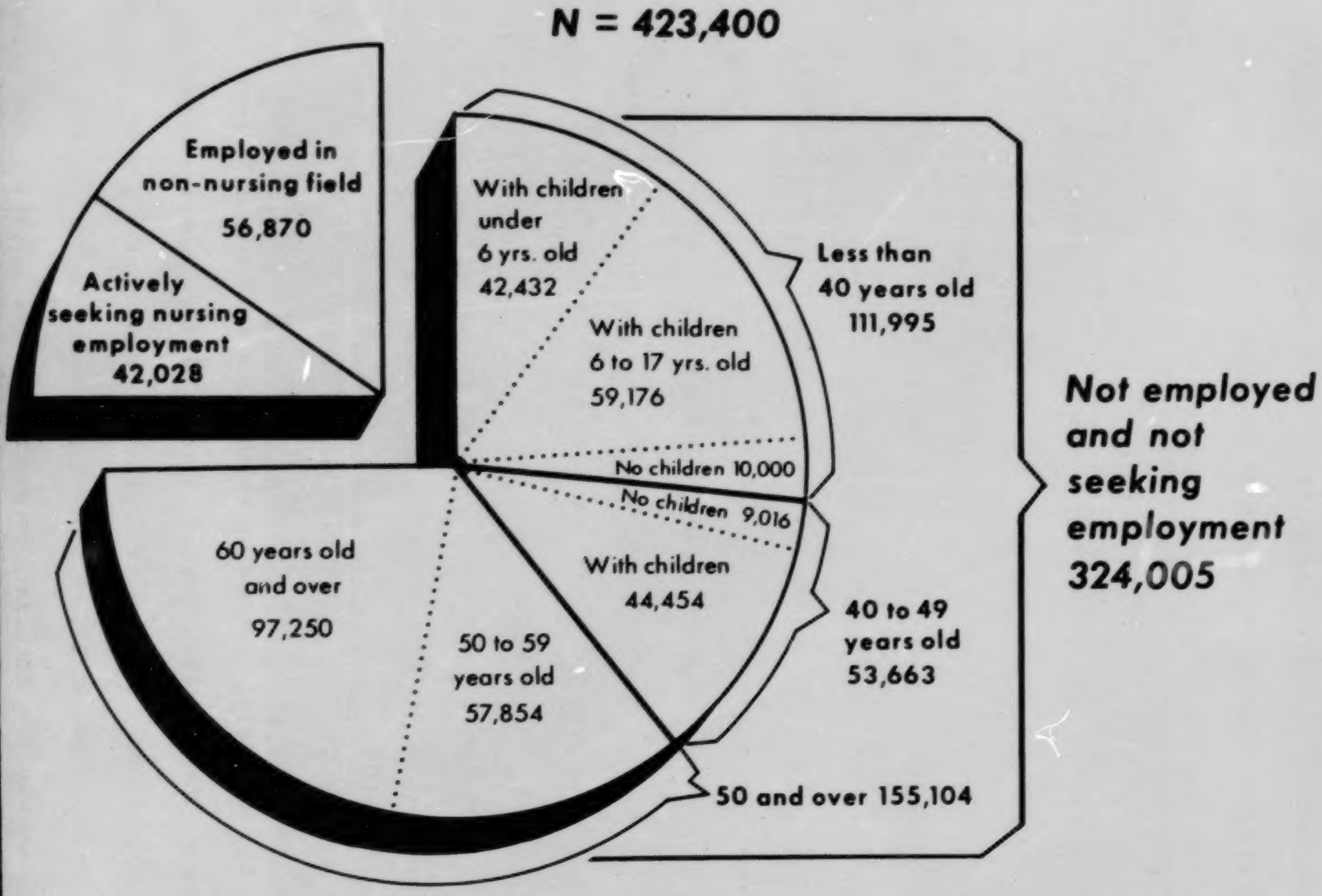
1980) found that the nurse's perception of autonomy over practice and frequency of delegation of inappropriate tasks by physicians were consistently significant predictors of job satisfaction. A third study carried out in Texas (Wandelt, 1980), and subsequently replicated in other States with similar results (Lindeman, 1980), reported that nurses who remain outside nursing do so because of working conditions.

At the heart of the problem is the conflict between hospital administration and nurses as to the distinction between nursing practice and the job of nursing. The definition of nursing practice used by the Wandelt study was "The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or his recovery (or to peaceful death) that he would perform unaided if he had the necessary strength, will, or knowledge. And to do this in such a way as to help him gain independence as rapidly as possible." The nursing job was defined as including nursing practice and other elements such as work schedule, rotation, coordination of patient support services, and interactions with other departments, visitors and staff. "Nurses perceive themselves as professionals engaging in nursing practice while administration views them as employees carrying out the job of nursing." As professionals, nurses are accountable for their practice yet they operate by institutional rules that fail to recognize their authority for making independent decisions concerning nursing care. These conditions of practice, as Aiken (1981) observes, that were tolerable for nurses in the past who spent limited amounts of time in the work force are not acceptable to the nurse of today who spends most of her adult life in part-time or full-time employment.

Inadequate starting salaries and inadequate salary differentials for new and experienced staff have long been cited as a major cause of the nursing shortage. Price and Mueller (1979) observe that economists assign primary responsibility to pay as a determinant of turnover, but they caution that the relative importance of this variable can be assessed only when considered in relation to other factors. Recent studies (Everly, 1976; Price and Mueller, 1979), however, reveal that salary does not have a direct effect on turnover except as it becomes marginal to other determinants such as job satisfaction and the perception of recognition for a job well done. The significance of salary as a factor in turnover should certainly not be discounted, however, for as more nurses become primary full-time wage earners, salary may assume greater importance in relation to other determinants (Price and Mueller, 1979).

Mounting dissatisfactions with professional working conditions, coupled with pressures inherent in the high stress (work) environment of a hospital, are the principal causes of the "burnout" phenomenon. This process includes symptomatology such as exhaustion and chronic fatigue, boredom, judgemental thinking, disillusionment, and keeping one's distance from patients. Not all nurses are equally vulnerable; those working in intensive care, burn, or oncology units and those who care for terminally ill patients are at greater risk. Other factors in the work setting heighten the underlying frustration which leads to "burnout." Experienced nurses resent the fact that there is little, if any, monetary reward for clinical experience. They take exception to the emphasis placed by hospitals on recruitment of new staff, as opposed to increasing the incentives of those already employed to remain in practice at the hospital. For example,

Figure 1. -- Characteristics of registered nurses not employed in nursing, September, 1977.



Source: 1977 National Sample Survey of Registered Nurses the California Hospital Association estimates net recruiting costs for attracting new staff average $7,548 per nurse (Friss, 1981). Newly graduated nurses, on the other hand, suffer frustrations in handling assignments or positions disproportionate to their background experience. Nursing literature is replete with evidence that nurses are concerned with the quality of care they are able to provide. When quality is compromised, dissatisfaction increases, frequently to the point of burnout, and they leave the practice of nursing.

Registered Nurses with Minority Backgrounds

Two new data sources have yielded valuable information on nurses with minority backgrounds. The first of these, the 1977 National Sample Survey, has provided descriptive information on the characteristics of nurses with minority backgrounds in the work force. The second source is the final report of a retrospective longitudinal study of federally supported grants and contracts whose purpose was to increase the number of disadvantaged and underrepresented persons in the nursing profession (Hernandez and Pick, 1980). Although the two surveys dealt with different population groups, the general conclusions tend to corroborate one another.

According to the National Sample Survey, an estimated 6.2 percent (87,386) of the registered nurses in the United States had racial or ethnic minority backgrounds. Of this number, approximately 2.5 percent were black, 2.1 percent were Asian, 1.4 percent Hispanic, and 0.2 percent were American Indian. Almost one-forth (24.8 percent) of all nurses with racial/ethnic minority backgrounds were located in the Pacific States, constituting 11 percent of the nurse supply in the Pacific area. The

Middle Atlantic States ranked second (24.6 percent) in terms of geographic location of nurses with minority backgrounds, followed by the East North Central States (14.5 percent) and the South Atlantic States (13.9 percent). Relatively fewer proportions of the minority nurses were in the other regions. The proportion of minority in relation to nonminority nurses was also the smallest (2 - 3 percent) in the New England, Mountain, and West North Central States.

Black nurses were more likely (30 percent) to have completed their initial preparation for nursing in an associate degree program than were nonminority nurses (11 percent). Nurses from Asian or Pacific Island backgrounds were more likely (30 percent) than their nonminority counterparts (13 percent) to have had their initial preparation in baccalaureate nursing programs. For all nurses with minority backgrounds, 72 percent had a diploma or associate degree as their highest level of educational preparation in nursing; 23 percent, a baccalaureate degree; and 5 percent, a master's or doctoral degree. Among nonminority nurses, the corresponding percentages were 79, 17, and 4, respectively.

Minority nurses were more likely to be employed in nursing (83 percent) than nonminority nurses (69 percent) and among those employed, a larger proportion (85 percent) were working on a full-time basis as compared to nonminority nurses (67 percent).

The contract "Retrospective Longitudinal Study of the Full Utilization of Nursing Talent" (Hernandez and Pick, 1980) was undertaken to document accomplishments made through 34 federally supported grants and contracts to recruit individuals from disadvantaged and underrepresented population groups into schools of nursing and assist them to complete their study programs. The study was also designed to provide information on the extent to which individuals who had received support under these grants and contracts subsequently found employment in shortage areas. The full utilization program spanned a period of more than 10 years, during which time its emphasis changed significantly. During the initial period of funding (1967-1971), the program emphasis was on reaching financially disadvantaged junior or senior high school students and assisting them to undertake and complete programs of nursing education. As concern mounted for augmenting the nurse supply, particularly in shortage areas, the program objectives broadened to encompass new target groups, including men, veterans, unlicensed graduate nurses in need of further training, licensed practical nurses, medical corpsmen, and older women as well as individuals from underrepresented ethnic and racial groups. Among the survey respondents, however, 36 percent had racial or ethnic minority backgrounds. Twice as many black respondents lived in inner cities as opposed to rural areas. Hispanics, also, were a predominately inner-city group. Nurses who had originally come from inner cities initially chose employment in the same type of setting (89 percent). Although other data from the survey were not disaggregated by minority background, findings indicate the respondent group as a whole worked with population groups composed of minorities, elderly, and economically disadvantaged. This tends to support the hypothesis that individuals who are themselves either economically disadvantaged or members of ethnic minorities and underrepresented groups are motivated to serve disadvantaged populations.

Distribution of Registered Nurses Among the States

Since the number of nurses in each State and area of the country varies, the measure used to compare the availability of nurses in each area is the ratio of nurses to population. Wide variation exists from State to State and from county to county in the number of employed nurses available to the population of the area, as measured by the ratio of employed nurses per 100,000 population. Data from the 1977 Inventory of Registered Nurses (ANA, 1977) updates the data available from earlier Inventories discussed in the earlier reports in this series. The 1977 Inventory showed that, on a State-by-State basis, the nurse-population ratio varied from a low of 267 in Arkansas to 885 in the District of Columbia and 782 in New Hampshire. Although the nurse population ratios in each State had increased since the last Inventory was made in 1972, the variation among the States remained about the same.

As is true for the States, wide variation in these ratios also exists from county to county, with the heavily populated counties generally having higher ratios of nurses to population. In this connection, it should be noted that higher nurse-population ratios may not necessarily be an indication that more nursing service is available for the population of the area. It could be an indication of concentration of nursing services in one area used by a wider population group than the residents of the area. For example, the larger teaching and research hospitals, which require proportionately greater levels of nursing personnel, are located in more populated areas in the country.

Further, registered nurses, for the most part, require a facility or organized service setting in which to practice. Therefore, relatively low nurse-population ratios could be an indication of the absence of such facilities or services rather than a lack of nursing personnel, per se. Of interest here is that 82 percent of the estimated employed nurses in the 1977 Inventory of Registered Nurses were in metropolitan areas. The ratio of nurses per 100,000 population in metropolitan areas was 518, compared to an overall nurse-population ratio for all employed registered nurses in the country of 472.

Characteristics of the Registered Nurse Work Setting

This section examines data on the current supply of nurses in terms of the settings in which they work and the characteristics of the populations they serve.

Acute Care

More nurses are employed in hospitals than in any other type of practice setting. The 1977 National Sample Survey of Registered Nurses found that of the estimated 978,234 employed registered nurses, 61.4 percent (601,011) were working in hospitals, representing an increase of 15.9 percent over 1972. Over 70 percent of all hospital-employed nurses were working full time (USDHEW, 1977) and approximately 75 percent held either an associate degree or diploma as their highest credential (Moses, 1979). An estimated 4 percent of registered nurses have master's level preparation and only 30 percent of those prepared at the master's level are employed in hospitals (Moses, 1979).

More nurses are employed in hospitals than ever before, yet the American Hospital Association has estimated that over 80 percent of hospitals do not have an adequate supply of nurses ("Nurse Shortage,' 1980). This results from greater concentration of acute care beds and from by the changing context of nursing practice in acute care settings. Advances in the basic sciences and the development of sophisticated technologies have revolutionized medical and nursing practice. Medical and surgical interventions not thought possible 20 years ago are now commonplace, with each day bringing newer, more complex procedures into the mainstream of hospital care. Accordingly, the nature of the patient population has changed. Those who are admitted into hospitals have more severe illnesses and more complex problems, yet their length of hospitalization is shorter, which presents nurses with a more dependent and more seriously ill patient population than in the past.

The role of the nurse in acute care settings has evolved in response to these changes. Findings from research in the basic and behavioral sciences as well as in nursing itself have expanded the scientific base of nursing practice and sharpened its clinical focus. As a result, nursing practice has necessarily become more specialized and complex. The skills and knowledge needed for interventions based on expert assessments and clinical judgments differ from one patient population to another and nursing experience in one area of practice is not necessarily transferable from one setting to another.

Expertise in a given area of practice can be developed in the practice setting itself, through continuing education or through formal programs of advanced training. However acquired, there is evidence to support the hypothesis that the higher the qualifications of the nursing staff, the better the quality of care (Davis, 1974; Davis, 1972; Waters, et al., 1972). For example, in a study designed to explain wide variations in hospital postoperative mortality rates, the qualifications of nurses for direct patient care, the ratio of nurses to non-nurses, and the extent to which decisions regarding nursing management were centralized at the nursing unit level were important determinants of quality of care (Scott, et al., 1976). Further, in a community setting, the use of expert interdisciplinary teams, including master's prepared nurse clinicians, was essential to successful implementation of a triage health care delivery system (Hodgson and Quinn, 1980).

While the overall number of hospitals in the Nation has not changed over the past few years, the number of units within existing hospitals providing specialized care and using sophisticated technologies has grown, resulting in a need for increased numbers of well-qualified and specialized registered nurses to provide care. This growth in sophistication and specialization has the effect of intensifying rather than reducing the number of staff required.

Most of the care given to hospitalized patients is provided by nurses employed by the hospital. However, self-employed private duty nurses supplement, although to a decreasing extent, care provided by the hospital-employed staff. These nurses are usually employed directly by patients or their families to provide individualized care for a selected interval. They usually care for only one patient at a time. In 1977 an estimated 3 percent (28,563) reported private duty as their field of employment with more than half indicating they were employed full time. The number of private duty nurses represents a decrease of 29.3 percent since 1972, reflecting the impact of increasing health care costs and the trend for the institution to assume increasing responsibility for care of the acutely ill in specialized units. As a group, private duty nurses are older (median age 52.3 years) and hold a diploma as their highest educational credential.

Temporary nursing services are another source of supply used by hospitals to supplement their employed staff.[2] When nurses from temporary agencies are used, they are expected to provide services similar to those provided by staff nurses employed by the hospital. The rise of these agencies as a factor in the market for registered nursing services is so recent that neither its magnitude nor its significance is yet documented. Numerous articles in nursing and hospital literature of the past 5 years, however, attest to the growing importance of such temporary nursing agencies as intermediaries between the nurse labor supply and the demand for these services by health care providers. Since this type of employment was not included in the list of employment settings from which respondents to the 1977 National Sample Survey could choose an answer, a low estimate was made of 0.4 percent (4,266) nurses so employed, based upon replies of those who added this setting to the list.

There is considerable difference of opinion as to the effect these agencies may have on the supply of nurses, the quality of care, and the cost of providing nursing services. To answer these questions, the Division of Nursing, in August 1980, launched a nationwide survey of temporary nursing services, of nurses employed by them, and of institutions and agencies that utilize temporary nurse staffing. Findings from the survey, available in the first quarter of 1982, will provide information useful for planning for nurse resources and the delivery of care.

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[2] A "temporary nursing service" is an agency that employs registered nurses and assigns them to work on a temporary or supplemental basis for its clients. These clients, including hospitals, nursing homes, other health care institutions, and individual patients, pay the temporary nursing service for the services of its employees.

Long-Term Care

The current number of elderly Americans and the projected growth rate for this segment of the population are major contributors to the current and anticipated future demand for nursing home care. Between the years 1953 and 1978, the population over age 65 increased by 76.3 percent; assuming a declining mortality rate, the aged population will be the fastest growing segment of the population, increasing 59 percent by 2203 while the population of all ages increases only 28 percent (Hatch, 1980).

The rapid increase in the number of nursing homes and in the number of beds in nursing homes reflects the vulnerability of an aging population to organic and functional impairment. Although "long-term care" and "nursing home care" are frequently used interchangeably to refer to extended care of aged patients, important distinctions should be made between the terms. Most long-term care is provided by families in homes, with support from various other private and public agencies. Long-term care is also provided in institutional settings such as psychiatric or chronic disease hospitals, adult day care centers and a variety of community-based institutions such as multipurpose senior citizen centers. Nursing homes comprise the largest number of facilities providing institutional long-term care serving individuals of all ages. The term "nursing home" is applied to those inpatient facilities where nursing is the principal service provided, whether for long-term residents or for those who require shorter term, more intensive convalescent care. Since data from the 1977 National Sample Survey (Roth et al., 1977) regarding type of practice setting were collected and analyzed in terms of the employing agency, the following discussion is specific to nurses employed in nursing homes in which 86 percent of the patients were 65 years of age or over.

Data based upon a sample of nursing homes surveyed in the National Nursing Home Survey (USDHEW, NCHS, 1979), indicate that the number of residents in these facilities increased by slightly more than a quarter of a million between 1974 and 1977. The rapid increase in the number of "very old," 75 years of age or more, is well documented. Indeed, residents 75 years of age and over accounted for more than half of the 250,000 increase in nursing home residents. Since only 5 percent of those 65 and over are institutionalized in nursing homes at any given time, it follows that the most dependent and most vulnerable aged are represented in the institutionalized group of aged persons. Since the effects of illness and injury are incremental, the older the patient, the greater the need for nursing care.

Residents from the sample of nursing homes were also classified in terms of their ability to carry out activities of daily living: dressing, toileting, mobility, continence, and eating. Almost 70 percent (69.4 percent) of the residents required assistance in dressing; over half (52.6 percent) were partially or totally dependent upon assistance with toileting; two-thirds needed help in walking or were chairfast or bedfast; more than half (53.3 percent) had difficulty controlling bowel or bladder function or required ostomy care; almost one-third (32.6 percent) needed assistance with eating. The data conclude that of the resident population surveyed, only 9.6 percent were independent in all five areas of daily living. These data do not classify patients in terms of functional impairment due to senile psychoses, organic brain damage, or mental retardation, but other sources estimate that between 55 and 80 percent of the patients in nursing homes have some degree of mental impairment (Moss, Halamandaris, 1980). These problems are as compelling in terms of need for nursing care as are physical limitations. However, findings from a recent study showed that the severity of patients' physical problems was the single determinant in the allocation of nursing time to patient care (Bruun, 1980).

As reported in the 1977 National Sample Survey, this patient population is cared for by 79,647 registered nurses, or 8.1 percent of the active work force, 58 percent of whom were employed on a full-time basis. Although the number of nurses employed in nursing homes is a 42-percent increase over 1972, only 11 percent of all nursing home employees are registered nurses. According to data from the National Nursing Home Survey, there were 4.8 full-time equivalent registered nurses for every 100 beds; 6.1 licensed practical nurses, and 30.3 nurse aides. In other words, aides provided six times as much nursing care as did registered nurses and five times as much as licensed practical nurses. Since nurse aides are minimally prepared for their responsibilities and are unlicensed, they require more instruction and supervision than more experienced staff. The need for supervision of inexperienced personnel is compounded due to their high turnover rate, estimated at approximately 75 percent. This has the effect of diluting still further the amount of professional nursing time for direct patient care.

According to the 1977 National Sample Survey, almost one-half (49 percent) of the registered nurses working in nursing homes provided bedside nursing care; 24 percent were head nurses or supervisors; 21.7 percent were administrators. Consultants accounted for 1.5 percent of the total, and clinical nursing specialists for only 0.3 percent. The largest proportion of nurses employed in nursing homes held a diploma as their highest level of educational attainment.

Community Health Nursing

Growing understanding of causes and risk factors associated with premature morbidity and mortality and concern with escalating costs of institutional care have underscored the need for community-based services aimed at health promotion and disease prevention. According to the Bureau of the Census (U.S. Department of Commerce, 1978), only 1 percent of the total U.S. population are in acute, long-term care, or other institutional settings at any one time. The other 99 percent, over 228 million people, are at school, at work, or at home. This is the population served by 9 percent of the registered nurse work force employed in public or community health. During the 5-year period 1974-79, the supply of registered nurses working both full time and part time in community settings increased by one-third, from 61,036 to 81,219 (USDHHS, Division of Nursing, 1979).

Community health nurses are concerned primarily with health promotion, health maintenance, health education and management, and coordination and continuity of care within the community. The distinguishing characteristic of the care they provide is its focus on unmet health needs of individuals, families, and communities and helping to cope successfully with threats to health and with problems of illness. Whereas the focus in institutional settings is on the individual and his family, the focus of community health nursing is on the community and its interaction with the population it serves.

Community health nurses are employed in a variety of agencies and organizations and at various levels of government with mandates to protect the health of the public. The latest Survey of Public Health Nurses (USDHHS, Division of Nursing, 1979) reports 69,294 registered nurses employed full time in community health in 1979. Of these, by far the largest number (63,893) work in official or voluntary agencies at the local level. These include visiting nurse services, official health units, health maintenance organizations, hospital-based home care programs, hospices, free standing neighborhood health centers, senior citizen centers, day care centers, congregate living facilities and boards of education. An additional 2,801 registered nurses are employed by State agencies.

The largest proportion of community health nurses, approximately 80 percent, are providing direct patient care. However, about one-third of this work force, those educationally prepared for the full scope of community health nursing practice, are devoting some portion of their time to directing the work of less well-prepared staff. The second largest proportion of nurses in community health, 8 percent, are engaged in supervision of nursing personnel in various practice settings and in overseeing the services provided by home health aides, homemakers, and numerous other workers providing supplementary support services. Administrators account for 7 percent of the nurses in community health while those providing consultant services in specialized practice areas account for an additional 2 percent.

Working with groups within a community affords nurses an opportunity to improve health through early identification of personal or environmental factors which act as barriers to health and health care. Groups may be bound together by any one of many common features or interest--ethnic background, age or occupation, to mention only a few. Two population groups have traditionally claimed the attention of nurses in community settings--school-aged children and adults in their places of employment.

In addition to the nurses employed in community health agencies and organizations, the community health area takes in, as well, those nurses employed in occupational or industrial settings. During the 1970's, about 2.5 percent of the employed nurse population worked in these settings, an estimateed 24,000 nurses, according to the 1977 National Sample Survey of Registered Nurses.

Other Ambulatory Care Settings

An estimated 69,263 nurses reported working in the offices of physicians or dentists, a 27.4 percent increase since 1972. Forty-three percent, however, worked on a part-time basis (Roth, et al., 1979). In 1977 the largest proportion (44.1 percent) were employed by physicians or dentists who had solo practices; approximately one-third (33.9 percent) were working for physicians or dentists who had partnership arrangements; and 20.6 percent were employed by a group practice.

Registered nurses working in these types of settings were generally graduates of diploma programs. Most were married and had children at home. Therefore, they may have been attracted to this type of practice because of the convenience of the working hours, despite generally lower salaries than those paid by hospitals, fewer fringe benefits, and less opportunity to participate in programs of continuing education.

Other Fields of Employment

Only a small number (0.5 percent) of nurses in the work force reported self-employment in the 1977 National Sample Survey. However, since the data on the field of practice related to the previous position of the nurse, this may be a low figure. Those who may have combined self-employment with part- or full-time employment as their primary position would not have undertaken their self-employment positions. Nurses who worked primarily on a fee-for-service basis reported a variety of position titles: patient care education, utilization review coordinator, nurse anesthetist, consultant, etc.

Approximately 1,500 nurses reported working in central or regional offices of a Federal agency, 207 in State boards of nursing, 1,079 in nursing or health-related associations, and 70 in health planning agencies.

Rates of Compensation for Registered Nurses

The 1977 National Sample Survey of Registered Nurses estimated that the average annual salary of a full-time registered nurse was $12,950 in September 1977. Salaries of registered nurses tend to vary according to the type of setting in which the nurse works and the level of position as well as the geographic location of the employment. Thus, the sample survey shows a range of average salaries for full-time nurses in major areas of employment from $11,540 in student health services to $14,800 in nursing education. On a geographic basis, the average salary for all full-time registered nurses in the area ranged from $12,500 in the South to $13,900 in the West.

Of concern, as well, in a review of the compensation of registered nurses, is the entry salary of a beginning professional. Preliminary, unpublished data from the National League for Nursing's annual study of newly licensed nurses show that in 1979, full-time employed registered nurse respondents had a median salary of $12,700 six months after licensure. Some differences in the median salaries for the newly licensed nurses were noted when the type of educational program from which the new licensee came was taken into account. The median salary of a diploma graduate was $12,400. Associate degree graduates had a median salary of $12,500 and baccalaureate graduates, $13,100. Salaries of these new entrants to nursing varied according to the area of the country in which they were located. With the exception of the western part of the country, where there was little difference among the various types of graduates, median salary for the baccalaureate graduate tended to be somewhat higher than the medians for the other types of graduates. The eastern part of the country had the most marked differences.

The studies made by querying employers of nurses augment the generalized data cited above and provide more specific data on compensation in various types and locations of employment. The latest data from employer surveys, and the studies from which they came appear in table 27. Perhaps of greatest interest, because it represents data on the major source of employment for registered nurses, is the study conducted by the Bureau of Labor Statistics (USDOL, BLS, 1980) in non-Federal hospitals in selected metropolitan areas.

This study, carried out in September 1978, is the latest in a series of such studies and is the source of data for this report.

In the 22 metropolitan areas in which BLS collected data, the average annual earnings of a staff nurse in a non-Federal hospital ranged from $12,077 in Buffalo, New York, to $17,306 in San Francisco, California. Since hospital salaries tend to vary according to the size of the hospital as well as the size and location of the community, the data shown for these metropolitan areas overstate possible salary levels for hospital nurses on a national basis. These data, however, might be particularly helpful in tracking changes over time since the BLS surveys have been carried out on a 3-year-cycle basis for a number of years. A comparison between the area average earnings reported in this study and those found in the August 1975 study shows wide variation in the increases experienced during that period. The average annual percent increases in staff nurses' average earnings ranged from 2.9 percent in New York and 3.8 percent in Baltimore to 9.7 percent in Houston.

Educational Preparation and Specialty of the Registered Nurse Supply

Basic nursing education prepares all nurses for direct patient care in institutional settings; programs leading to a baccalaureate degree prepare graduates for community settings as well. However, the diversity of nursing practice dictates the need for specialized skills in clinical practice areas, or in the functional specialties of teaching or administration. This section of the report examines the supply of registered nurses in terms of types and levels of educational preparation. Five major categories have been singled out for discussion: nurse practitioners, nurse educators, nurses with doctoral degrees, nurse administrators, and nurse clinicians.

Nurse Practitioners

Federal interest in the training of nurse practitioners gained momentum as the demand for primary care services increased in the face of a shortage of primary care providers and the lack of access to these services which became a recognized public concern. Well before support for nurse practitioner training was authorized, however, Federal dollars supported projects to define the role, to document the quality of care provided by this type of health care practitioner,and to evaluate and test the safety and efficacy of this new role (USDHEW, Division of Nursing, 1979).

In November 1971 the Report of the Secretary's Committee to Study Extended Roles for Nurses, entitled "Extending the Scope of Nursing Practice," (1972) was published. This followed the President's Health Message (1971) of that year, highlighting the significant contribution that specialized nurse practitioners could make in extending health services. The Nurse Training Act of 1971 broadened the authority for special project grants to include nurse practitioner training, and both the Nurse Training Act of 1975 and the Nurse Training Amendments of 1979 included discrete authorities and authorizations for appropriations for this purpose. From 1975, with passage of the Nurse Training Act of that year, through fiscal year 1980, $50 million has been invested in nurse practitioner training. Of this amount, $3.4 million has been used during the past 3 years for student support under the traineeship authority (USDHEW, Division of Nursing, 1980).

Nurse practitioners are registered nurses whose additional formal preparation equips them for expanded functions in the dimensions of nursing care, which includes diagnostic and treatment needs of patients. In addition to delivering the traditional nursing services, they are qualified to perform some services more often delivered by physicians such as managing common self-limiting conditions and stabilized chronic illnesses. Their scope of practice is necessarily broad since they both facilitate access into the health care delivery system and provide continuity within the system as the patient moves from one part of the system to another. Because they are licensed in their own right as nurses, they are accountable for their nursing practice, which includes numerous functions based upon independent nursing decisions. In the performance of those components of their role traditionally provided by physicians, nurse practitioners view themselves as collaborating with physicians in the delivery of primary health care. Parameters of practice have been established and nurse practitioners refer patients to physicians and to other health professionals based upon assessment of the patients' needs.

Nurses who practice as nurse practitioners are a relatively small segment of the registered nurse work force. They are, however, a national resource and for this reason the Division of Nursing initiated in 1973 a longitudinal study to provide national data for evaluating programs that prepare nurses for expanded specialty roles. The study, carried out under contract by the State University of New York at Buffalo (SUNY), has been conducted in three phases. Phase I, whose findings were reported in the First Report to the Congress, described nurse practitioner education in programs initiated prior to January 1974 and included descriptive information about the students who were enrolled. In the second phase of the study, the students identified in phase I were followed to determine the type and success of their subsequent employment and aspects of their role and functions as nurse practitioners. Findings from this phase of the study were reported in the Second Report to the Congress. Data from phase III, discussed in this report, include information on programs initiated or continuing between 1974 and 1977 and employment data on graduates of programs initiated after 1974 (Sultz, et al., 1980). The data are important not only for identifying the influences shaping nurse practitioner training but also for pointing the future direction of nurse practitioner practice.

In January 1974 the SUNY study identified 133 nurse practitioner training programs that met the study criteria. Between 8,000 to 10,000 students were graduated from these programs by the end of 1975. There are now approximately 200 nurse practitioner programs, representing only modest growth since January 1979 when the SUNY study reported 178 in existence. Of this 200, approximately 105 receive Federal support. As of January 1981, current supply of nurse practitioners is estimated at 18,000.

The completion of the third phase of the SUNY study has made it possible to document trends on the basis of data collected over a 9-year period. Several trends are worth noting. The first is the shift within the primary care practice specialties for which nurse practitioners are being prepared. Programs established in the early years of the nurse practitioner movement focused on pediatric practice. By 1973 the number of programs in this specialty stabilized, reflecting a sensitivity to the employment market and to health care needs. After that year, the specialty emphasis shifted to family and adult health, which encompasses a large geriatric population. Initiation of these programs accounted for growth in number of programs as well as number of graduates.

Although the number of programs leading to a certificate (117) still outnumber those leading to a master's degree (61), there has been a greater rate of growth in the latter type of program and a significant growth in the proportion of graduates from these programs. In the 3-year period from 1974-1977, the number of graduates awarded master's degrees increased by more than 6 percent to account for 26 percent of the total. These data suggest that graduates of master's programs will constitute an increasing proportion of nurse practitioners.

Responsibility for physical and psychosocial assessment and for management of care must be founded on advanced preparation in physiology and in other physical and social sciences. Moreover, the nurse practitioner's competence in a given clinical area such as family or gerontological nursing is dependent upon mastery of clinical content in these fields. Programs leading to a certificate have increased in length and have become more discriminating in student selection. The requirements for graduation are focused primarily on knowledge and skills related to primary health care, whereas programs leading to a master's degree include, in addition, advanced preparation for teaching and research.

A third important trend is the increase in number of both certificate and master's programs that are monitoring the experience of graduates as a means of keeping educational program content consonant with expanded practice roles. Characteristics evaluated by the programs included the match of the graduates' functions and responsibilities with those for which they were trained, their competency in practice, and the degree of independence with which they function.

In terms of geographic distribution of nurse practitioner training programs, the South ranked first with 35 percent, followed in rank order by the Northeast (29 percent), the West (21 percent) and the Midwest (15 percent). On an individual State basis, California had a slight edge (six) on New York and Arkansas (five each), but four other States (Alabama, Colorado, Mississippi, and Utah) followed closely with four per State.

The shift in program emphasis from pediatric to family nurse practitioner training is reflected in the distribution of the student population. More than two-thirds of the students (68.9 percent) enrolled in training programs in 1977 were preparing for practice as adult or family nurse practitioners, and the number preparing for pediatric practice had declined to slightly more than 10 percent. The percentage of students preparing for midwifery practice remained fairly stable (4.7 percent), as did the smallest percentage of students (1 percent) who were preparing for psychiatric nursing practice in primary care settings.

Characteristics of the student population have not changed significantly during the course of the longitudinal study. Although the group studied in phase III was somewhat younger (more than two-thirds were under 35 years) and more likely to be married (59 percent) than were their predecessors, they were predominately female (97.1 percent) and white (91 percent). Students enrolled in certificate programs were generally older and had had more years of professional experience than those in master's programs; more than one-half of the certificate students lacked a baccalaureate degree before entering nurse practitioner programs. Since hospitals are the largest employers of nurses, it is not surprising that most students' previous experience in nursing had been hospital-based.

Data gathered from the SUNY study indicate that the number of graduates engaged wholly in nurse practitioner practice (53.5 percent) has increased over time, with a corresponding decrease in the number who reverted to practice in traditional roles (16.5 percent). Other graduates (30.0 percent) practiced in both the nurse practitioner and traditional roles, for example, those who were teaching in nurse practitioner training programs or providing consultation to other nursing staff. Changes have also occurred in the practice setting locations in which nurse practitioners work. The proportion employed in rural areas has substantially increased (from 16.2 percent in 1974 to 21.6 percent in 1977), while the proportion working in inner cities has decreased from 32.7 percent to 22.6 percent. Whether engaged in practice in inner cities or rural areas, almost half of nurse practitioners' patients had annual incomes of less than $4,000. Over half (54 percent) of the graduate program respondents surveyed by the study reported they were the first nurse practitioners to be employed in their particular practice setting. This finding indicates that nurse practitioners are moving into new health care delivery sites.

Approximately 90 percent of the graduates surveyed reported they were employed: more than 60 percent in ambulatory clinical practices such as community clinics, 17 percent in physicians' private practice settings, 10 percent in health departments or home health agencies, and 5 percent in extended care facilities. The reason most frequently given by employers (44.2 percent) for employing a nurse practitioner was to improve the quality of care by providing better patient education, by permitting greater attention to secondary problems, or by permitting a division of responsibility which allowed the physician to spend more time on complex problems. Increasing access to care was cited by an additional 39.3 percent of employers. This included increasing the number of patients in a practice, extending care to those previously unserved or establishing a new health service such as a school health clinic. Utilization of physicians for consultation was influenced by a number of factors such as the availability of the physician, the type of setting and the practice specialty. However, nurse practitioners who had graduated from master's degree programs generally had less need to consult physicians on matters relating to patient management.

Eighty-five percent of nurse practitioners were employed full-time and salary was the source of virtually all income. Their average gross annual income ranged from $12,600 to $15,400, averaging approximately $2,250 more than earnings before their advanced training. Although the income of nurse practitioners in rural settings is less than that earned by practitioners in urban settings, the gap is narrowing.

Taken together, findings from the study confirm that nurse practitioners are well accepted both by employers and by the public. Ninety-three percent of surveyed employers considered the use of nurse practitioners cost effective, and those few who did not felt that their practice was not sufficiently large to use a nurse practitioner's time to maximum advantage. The findings clearly show that nurse practitioners are being readily absorbed into the work force and are being employed to improve quality of care and provide access to the health care delivery system. Moreover, they are using their newly acquired skills appropriately. Characteristics of the patient populations they care for and the settings in which they practice attest to their contribution in improving primary health care.

Nurse Educators

The 1977 National Sample Survey of Registered Nurses estimated there were 37,826 registered nurses employed in nursing education programs, 3.9 percent of all employed registered nurses. More detailed, comprehensive data on nurse-faculty are available from the National League for Nursing biennial surveys of the number of faculty employed by schools of nursing. In the most recent published data on registered nurse programs only (NLN, 1979), the League estimated there were 22,395 full-time and 4,938 part-time nurse-faculty in these programs. On a full-time equivalency basis, the estimated total was 24,864, 6.6 percent more than in 1976.

Baccalaureate and higher degree programs gained 15.7 percent and associate degree programs, 9.8 percent, offsetting the loss of faculty (9.8 percent) in diploma programs. Despite this gain, it was estimated that there were 909 unfilled faculty positions in 1978, 13 percent greater than the estimated vacancies in 1976. This increase was due in large part to the rising demand for faculty in baccalaureate and higher degree programs.

Some progress has also been made in increasing the number of full-time faculty educationally prepared for their responsibilities as teachers. The schools reported 1,062 prepared at the doctoral level. They represented 5.3 percent of the total full-time faculty, a gain of one percentage point since 1970. Those prepared at the master's level increased to 62.5 percent of all full-time faculty, in comparison to the 57 percent in 1976. However, 32 percent of full-time faculty still lacked the minimal acceptable academic preparation for teaching. Over 90 percent of full-time faculty employed in baccalaureate or higher degree programs had master's or doctoral degrees. In associate degree programs, less than two-thirds of the full-time faculty (64.8 percent) had acceptable academic preparation, and in diploma programs, less than one-third (32.6 percent) were so prepared. It is also significant that hospital-based diploma programs employed greater numbers of non-nurse faculty than did programs based in academic settings which have ready access to teaching resources in other departments. There are also regional variations in terms of the level of faculty preparation; the West fares better than any other region (85 percent in the West were prepared versus 65 percent for the other regions together).

Of all the full-time nurse faculty whose highest earned credential was a master's degree, four-fifths had majored in nursing. Master's degree graduates teaching in baccalaureate programs were more likely to have nursing majors (90.7 percent) than those in either associate degree (73.4 percent) or diploma programs (56.2 percent).

All three types of initial nursing programs responding to the NLN January 1978 nurse-faculty study reported a total of 1,270 administrators. These administrators are more likely to have higher level academic credentials than the faculty. In the baccalaureate and higher degree programs, 70 percent of the administrators had doctoral degrees. Almost all administrators had at least a master's degree in the associate degree and diploma programs, 98 percent and 95 percent, respectively.

Registered Nurses with Doctoral Degrees

Doctorally prepared nurses are a small but extremely important cadre within the nursing profession. They provide key leadership in the improvement of nursing practice, in the development of programs of nursing education, and in the design of innovative health care delivery systems. A 1973 survey of nurses with earned doctoral degrees identified 1,019 nurses so prepared (ANA, 1973). In a more recent study, conducted in 1979 by the American Nurses' Association under a grant from the Division of Nursing, Health Resources Administration, the number identified had increased to 1,964 or 0.2 percent of the nurses holding current licenses to practice. The report of this study (ANA, 1980) has been published and lists these nurses, together with data regarding their characteristics, distribution, and productivity. While most of these data have yet to be analyzed, it is clear that three-quarters of the nurses who participated in this study.

Preliminary analysis from 1,964 respondents to the survey questionnaire indicate considerable diversity in types of doctoral education. Before 1965, the Ed.D. was the most common doctoral degree earned by nurses; since that time the number of nurses earning the research degree (Ph.D.) has increased steadily to consitute one-half of all those who have completed doctoral study. The shift from Ed.D. to Ph.D. as the degree of choice followed the establishment in 1962 of the federally supported Nurse Scientist Training Program designed to finance research training at the doctoral level in basic science departments or disciplines related to nursing. Currently, most nurses seeking doctoral degrees enroll in programs awarding the degree in the field of nursing. Most of these programs in nursing offer the Ph.D. degree. The Doctor of Nursing Science, a professional degree, has also been awarded since the early 1960's, and the number of graduates from programs offering this degree, although not large, has shown a fairly steady increase. The shift toward doctoral programs in nursing parallels the profession's recognition that a solid and substantial body of nursing knowledge is being developed, based on a foundation in the behavioral and biomedical sciences. A small number of nurses hold other degrees such as the Dr.P.H., Sc.D., and D.P.A.

As was true in the earlier survey, many fields of study are represented among the recipients of doctoral degrees. Slightly over 40 percent of the respondents majored in some field of education. Majors in the social and behavorial sciences ranked second. Advanced nursing was a major for slightly more than 20 percent of the respondents, but it represents a rapidly growing focus of study.

The typical nurse with a doctoral degree is female, married, and approximately 49 years of age. Most respondents received their basic nursing education in a diploma program, and the average length of time which elapsed between the award of the first credential and the doctoral degree was 19 years. Once a nurse was admitted to the doctoral program, the average length of time for completion of the degree requirements was 4.59 years. Generally speaking, doctorally prepared nurses had majored in nursing at the baccalaureate and master's levels and in a field other than nursing at the doctoral level. Most nurses needed some financial support for their advanced training and Federal awards were the single most important source of such assistance.

Nine out of 10 doctorally prepared nurses in the study were employed, most of them full time. Although they work in a variety of settings, such as hospitals, community health organizations, and Federal, State, and local government agencies, the majority are employed in programs leading to a baccalaureate or higher degree in nursing. Teaching was the primary function for which most nurses with earned doctorates were employed. Administrative positions were held by one-third of the survey respondents and positions which included combined responsibilities for teaching, administration, and research were held by another 15 percent. Research as a major function was reported by less than 7 percent of the nurses in the study.

Nurse Administrators

Considerably less data is available on administrators of nursing service than on nurses in other clinical and functional specialties. A 1977 study of some 7,000 hospitals by the American Society for Nursing Service Administrators (ASNSA, 1977) is the principal source of data on directors of hospital nursing services. Nurses who served in this capacity typically rose through the organizational ranks of hospital nursing services, working first as staff nurses, and subsequently as head nurses and supervisors. Ninety-two percent had been assistant or associate directors before being named to their present positions. Slightly less than half (45.9 percent) held a diploma as their highest educational credential; 2.5 percent held an associate degree and another 23.6 percent a baccalaureate degree. Only 28 percent had preparation at the master's or doctoral level, the generally accepted level for management in nursing, as in other fields of endeavor. The survey also showed a positive correlation between size of hospital and level of formal education; the larger the hospital, the more likely it is to have a qualified nursing service administrator.

Although the nursing service department is the largest single unit within the hospital, administrators of nursing service reported varying levels of participation in overall hospital management. For example, two-thirds of the nursing service administrators reported that they participated in overall hospital management and over half helped to plan their institution's budget, but less than half were involved in priority-setting functions. Although 73 percent established the nursing budget, only 56 percent had full administrative responsibility for it.

Information on preparation of administrators of community nursing services is derived from the 1979 Survey of Community Health Nursing (USDHHS, Division of Nursing, 1981). In this survey the count of 11,431 full- and part-time nurses in administrative positions included not only directors but consultants, supervisors, and service coordinators. Of this number, 2,371 held a graduate degree awarded by schools of public health or by schools of nursing. A small number (198) had advanced preparation in fields other than public health nursing, bringing the total with advanced preparation to 2,569 or 22.5 percent of those in administrative positions. Nurses in administrative positions in local official and voluntary agencies accounted for almost half of this group; 824 were employed in official agencies and 495 in visiting nurse services and other voluntary agencies. Proportionately, 4.9 percent of nurses with graduate preparation had administrative positions in nonofficial agencies, while only 2.9 percent held such positions in official agencies. A group of agencies (1,290) classified as providing only home health care and mostly proprietary, employed 247 nurses (out of a total of 10,224) in administrative positions, of whom 2.4 percent had advanced preparation commensurate with the level of their responsibility.

Nurse Clinicians and Clinical Nursing Specialists

Respondents to the 1977 National Sample Survey questionnaire were instructed to indicate the nature of their nursing position from a list of 26 position titles. An estimated 8,065 indicated they had the title of clinical nursing specialist; 7,045, the title of nurse clinician. These numbers constitute 0.8 percent and 0.7 percent, respectively of employed registered nurses. Because these numbers represent a rather small proportion of the study sample, as well as the overall nurse supply, they should be treated as rough approximations.

Nurse clinicians and clinical nursing specialists, as the titles imply, are expected to be expert in a clinical practice area. They provide patient care and develop, through teaching and by example, the competencies of less experienced nurses and students to meet the needs of patients whose nursing care management requires special knowledge and skills.

Among those indicating that their position title was nurse clinician, 70 percent had as their highest educational credential a diploma or associate degree; only 11 percent had a master's degree. Of the clinical nursing specialists, about half had a diploma or an associate degree and 29 percent, a master's degree. Although advanced educational preparation in nursing is recommended by the nursing profession for practice in specialized areas of practice, these percentages suggest that the majority of nurses now functioning in these roles developed their expertise on the job, through programs of continuing education, or through independent study. Data from the 1977 National Sample Survey do not describe different patterns of functioning in relation to level of educational preparation. They do indicate, however, that for both practice groups, the largest percentage of time during a usual workweek was devoted to direct patient care (57.8 percent for nurse clinicians and 65.1 percent for clinical nursing specialists). The combined functions of consultation, supervision, and teaching ranked second. Only small percentages of time were devoted to administrative activities (6-7 percent) and to research (4-6 percent).

Projections of the Supply of Registered Nurses

Overview of Model

Section 951 of P.L. 94-63 directed that the adequacy of the supply of registered nurses for the future be considered according to level of educational preparation and within each State as well as nationally. These directives led to the development and refinement of new and revised methodologies, the base for which was described in the *First Report to the Congress, February 1, 1977* and *Second Report to the Congress, March 15, 1979 (Revised)*. The model used to project the registered nurse supply for this report evolved from the prior models and is based on the methodological research outlined in the prior reports. The current model was developed by staff of the Bureau of Health Professions to be directly responsive to the requirements of Section 951.

There are three types of projections made on a State-by-State basis:

- The nurse population: those with current licenses to practice.
- The nurse supply: all those practicing nursing, either full time
- or part time.
- The full-time equivalent supply: nurses practicing full time plus one-half of those practicing part time.

In each of the above instances, the projections are divided into three levels of highest educational preparation: associate degree or diploma; baccalaureate; master's and doctorate. To arrive at the nurse population, supply, and full-time equivalents migrations between States, inputs from the educational system (new graduates, post-RN baccalaureate and higher degree graduates), mortality, and licensure phenomena are first taken into account.

To properly identify effects of the changes in the nurse population, each aspect of change is developed in the model as a function of age. There are 10 age groupings identified in the model base. Thus, the projections that are produced as a result of the model show the registered nurse population and supply (total number or full-time equivalent) on an annual basis as a function of three characteristics of that population: (1) the 50 States and the District of Columbia; (2) three levels of highest educational preparation; and (3) age groups. Allowing for summary values on a national basis, a total of 1,560 cells or cohorts are necessary to describe the population and supply according to these characteristics.

Data Considered in the Projections

The current projections are initiated from a data set based on the 1977 National Sample Survey of Registered Nurses (Roth, et al., 1978) amplified by data from the 1972 Inventory of Registered Nurses (Roth et al., 1974). The same model is used to provide annual current estimates of the registered nurse population and supply as well as future projections of what might be available. The differences here are dependent on the treatment of graduation inputs. For "current estimates," graduation data are based on actual numbers taken from the annual surveys made by the National League for Nursing (NLN Nursing Data Book, 1979). For future projections, separate models have been developed which project the number of graduates from the varying types of programs based on assumptions made about the production of basic-entry-level or advanced-educational-level registered nurses. The assumptions used for the projections of future supply included in this report will be presented in the section below, Assumptions Underlying the Projections.

Other data inputs necessary to determine the nurse population on an annual basis include migration factors, mortality rates, licensure phenomena, and age distributions involved in the dynamics of change. Additionally, to determine the annual supply, the so-called activity rates, the proportion of the population which is working, are required. Unlike the educational input data, since most of these data are derived from comprehensive studies of the nurse population, there is no annual, or even regular, routine source for them which could be used for "current estimates." As is true for the future projections, the "current estimates" are based on the assumptions made about possible trends in these areas since they were last studied. The last comprehensive study of the nurse population for which data are available is the 1977 National Sample Survey.

A sample study of registered nurses that will provide data on the nurse population for November 1980 is currently being conducted by the Research Triangle Institute under a contract with the Division of Health Professions Analysis, Bureau of Health Professions, Health Resources Administration. It is anticipated that the data from this study will be available by the end of 1981. At that time the data base, along with a number of these input variables, will be reviewed and updated as necessary. A review of the data can aid in determining the degree to which the "current estimates" reflected true counts of the nurse population and supply for the years between 1977 and 1981.

Assumptions Underlying the Projections

As indicated previously, a number of assumptions about the output of the nursing education system as well as work and licensing behavioral patterns of registered nurses are required for the projections. With the exception of the assumptions regarding graduations from nursing education programs, only one set of assumptions is used for all the projections series in this report. Thus, the variation in the projections from one series to another is due solely to differences assumed for graduations and the effect of the varying graduation rates on the total nurse supply.

A number of considerations entered into the decision to maintain the same assumptions for all except the educational areas in the different series. First, it clearly demonstrates the impact of the effects of varying levels of graduates. Secondly, since the data for most of the other variables are rather sporadic, it is difficult to develop consistent trend patterns. Finally, it is believed that for the most part, there would not be any major changes in the patterns as they now exist, given no marked revisions in current conditions and scope of practice. Therefore, in all four series of projections of registered nurse supply included in this report, assumptions about behaviorial patterns of registered nurses are based on the following data and considerations:

1. Mortality Rate

   To determine the losses to the nurse population through death, age-specific mortality rates based on the 1976 life tables for white females, (the closest population cohort to the registered nurse population) are used throughout the projection period.

2. "Net Loss "Rates

In addition to mortality, changes in the registered nurse population result from lapsed and reinstated licenses. Since at present there are no available data upon which assumptions can be based for the separate determination of reinstated or lapsed licenses, a factor providing for a "net loss" in licenses has been derived from data obtained from the American Nurses'Association's annual licensure statistics (ANA, 1980), the 1972 Inventory of Registered Nurses (Roth, et al., 1977) and the 1977 National Sample Survey of Registered Nurses (Roth, et al., 1978). The same rate, relatively small, is used throughout the projection period. While the overall rate would undoubtedly change as the age distribution of the nurse population changes over the years, the low net loss rate suggests that refinements along this line might not yield significantly different results in the overall projections. The total resulting from this "net loss" rate is made age-specific from data included in these same data sources.

3. New Licensees

The number of new licensees from United States nursing education programs is determined from the latest available State Board examination passage rates. These rates are kept constant throughout the projection period. An examination of the data for the last years (through 1977) for which data were available when the assumptions were developed showed that the diploma and associate degree passage rates were relatively stable. Baccalaureate rates seemed to have declined slightly but, on the premise that they would not decline further, the latest rate was used.

To account for the non-U.S. graduate new licensees, a constant total of 3,700 foreign-trained nurses was included throughout the projection period. This estimate is based on the 1976 licensing data, (ANA, 1977) the last year's data available at the time the estimate was made. Since the requirement that foreign-trained nurses must take the licensing examination was first adopted in most States in the mid-1970's, trend data based on this requirement is not available. Furthermore, future implications of current immigration restrictions described earlier in this report are difficult to determine. Therefore, it was judged best to maintain the constant number. The age distribution of both the U.S. and non-U.S. new licensees is based primarily on data from the 1977 National Sample Survey of Registered Nurses.

4. Activity Rates

Aside from the assumptions made about the output from nursing education programs, which are discussed in a separate section below, the last major consideration relates to activity rates. Activity rates, that is, the proportion of the population employed in nursing, were maintained throughout the projection period on the assumption that the rates have nearly peaked for the younger nurses and the overall rate is the highest it has been. An examination of the activity rates for all women with educational background similar to that of registered nurses suggests that the rate for nurses may be somewhat higher than that of other women and that the "pattern" of age-specific rates for the registered nurses was similar to that of other women.

It is important to note that the rates as they are used in the model are "age-specific." Thus, while the individual age group rates were not varied throughout the projection period, the overall activity rate for the total population does vary since it is dependent on the age distribution of the nurse population. While rates for the younger nurses have continued to increase over the years, rates for the older nurses have decreased. An examination was made of the limits of each of the age group activity rates. Although the limits explored are somewhat theoretical, given the aging nurse population, the end result noted from this exploration indicated lower overall population activity rates than the ones in the projections for this report.

Assumptions About Nursing Education Graduations

Data available on nursing education programs for the Second Report to the Congress seemed to suggest clear trends in the number of programs and students within each program so that projections of graduations could be based on assumptions about what might occur should changes be made in the financial backing for these programs. Later data, however, suggest changes in the trends. Consideration of these later trends led to the approaches undertaken in the present four series of graduation projections.

Series A

Series A has been developed as a "middle" level projection. It represents a "baseline," considering recent trends. In Series A, diploma program admissions continue to decline at a rate consistent with the prior data with the provision that some programs will operate throughout the projection period. Associate degree admissions are assumed to be most likely for the 17- to 34-year-old female component of the population, and future admissions to these programs would decline slightly as a proportion of this total population group. Baccalaureate admissions come basically from new high school graduates, as do the diploma admissions, and together, these two admissions groups are examined as a proportion of new high school graduates attending nursing programs. This proportion continues the negative trend it has shown in the late 1970's. The graduation rates applied to these admissions data were developed from an examination of trends in specific class graduation rates for the past 8 or 9 years. It should be noted here that, with the exception of the baccalaureate, which was more variable, the graduation rates varied very little for each program in the last three or four years. The rates used were 73 percent for diploma; 69 percent for associate degree, and 63 percent for baccalaureate (this last is based on a conversion of all baccalaureate admissions to a 4-year basis). Post-RN baccalaureates from generic programs are a function of the basic graduates from these programs, with an additional fixed factor for those graduating from nongeneric programs. Master's degree graduates were determined from the maintenance of the linear trend in the number of programs, maintenance of the trend increases in average enrollment per program, and the proportion who were full-time students stabilizing at 50 percent. Graduations were determined to be 35 percent of enrollments, which is the proportion noted for the 2 years the full-time enrollment rate was 50 percent. In addition, to account for the master's graduates from non-NLN-counted nursing programs, an additional fixed factor is applied to the graduate totals.

Series B

Series B is the so-called "higher" series. It is based on the assumption that current concerns about shortages of registered nurses would lead to reversals in the present admissions trends to basic programs, to increased higher level educational opportunities, and to an increased number of students. Specifically, assumptions made define diploma program trends as the same as in Series A, but reverse associate degree program trends in that Series. Thus, in Series B, the decreasing trend in the proportion of 17- to 34-year-old females entering associate degree programs would reverse so that, about 1985-86, it would become the proportion it was in the mid-1970's and remain at that level through the rest of the projection period. Also, the trend of the combined baccalaureate and diploma admissions as a proportion of new high school graduates would reverse and by 1985-86 become the proportion it was in the early 1970's and remain at that level through the rest of the projection period. The proportion graduating from baccalaureate programs would become 65 percent, the estimate for the latest data, while the rates for the other programs would remain the same as in Series A. In addition to these higher levels of basic nursing graduates, it was assumed that the number of master's degree programs would increase to 328 by the end of the projection period. This figure is based on an intramural study made of colleges and universities with an apparently proper milieu for added master's programs (USDHHS, 1979). It was further assumed that the trend toward part-time enrollment would reverse so that by the end of the projection period, 75 percent of the enrollees would be full-time; thus changing the proportions of enrollments that graduated each year accordingly. The increase in the availability of "nursing" master's programs would offset, to some extent, the number of students attending "non-nursing" programs.

Series C

Series C is based on the premise that present concerns about the baccalaureate degree as the entrance level into practice would lead to a sharp decline in the proportion of 17- to 34-year-old females entering AD programs and a sharp increase in the number of baccalaureate programs available (an increase of 200 programs by the end of the projection period). This increase in baccalaureate programs was derived from the study mentioned earlier examining colleges and universities having apparently proper milieus for added master's programs but without a current nursing baccalaureate program. Admissions to diploma programs were determined as they were in Series A and the master's degree assumptions, as in Series B.

Series D

Series D is the most constrained set of projections, consisting of a combination of diploma and baccalureate projections from Series A and the associate degree projections from Series C. In essence, it assumes that current discussions about the entrance level into practice leads to a sharp decline in admissions to associate degree programs. At the same time, however, there is no offsetting increase in baccalauareate admissions. Instead, baccalaureate admissions continue recent trends as demonstrated in data gathered by NLN from the schools. Series D also maintains the type of trends noted in the master's degree programs in Series A.

Projections of Basic Nursing Education Graduations

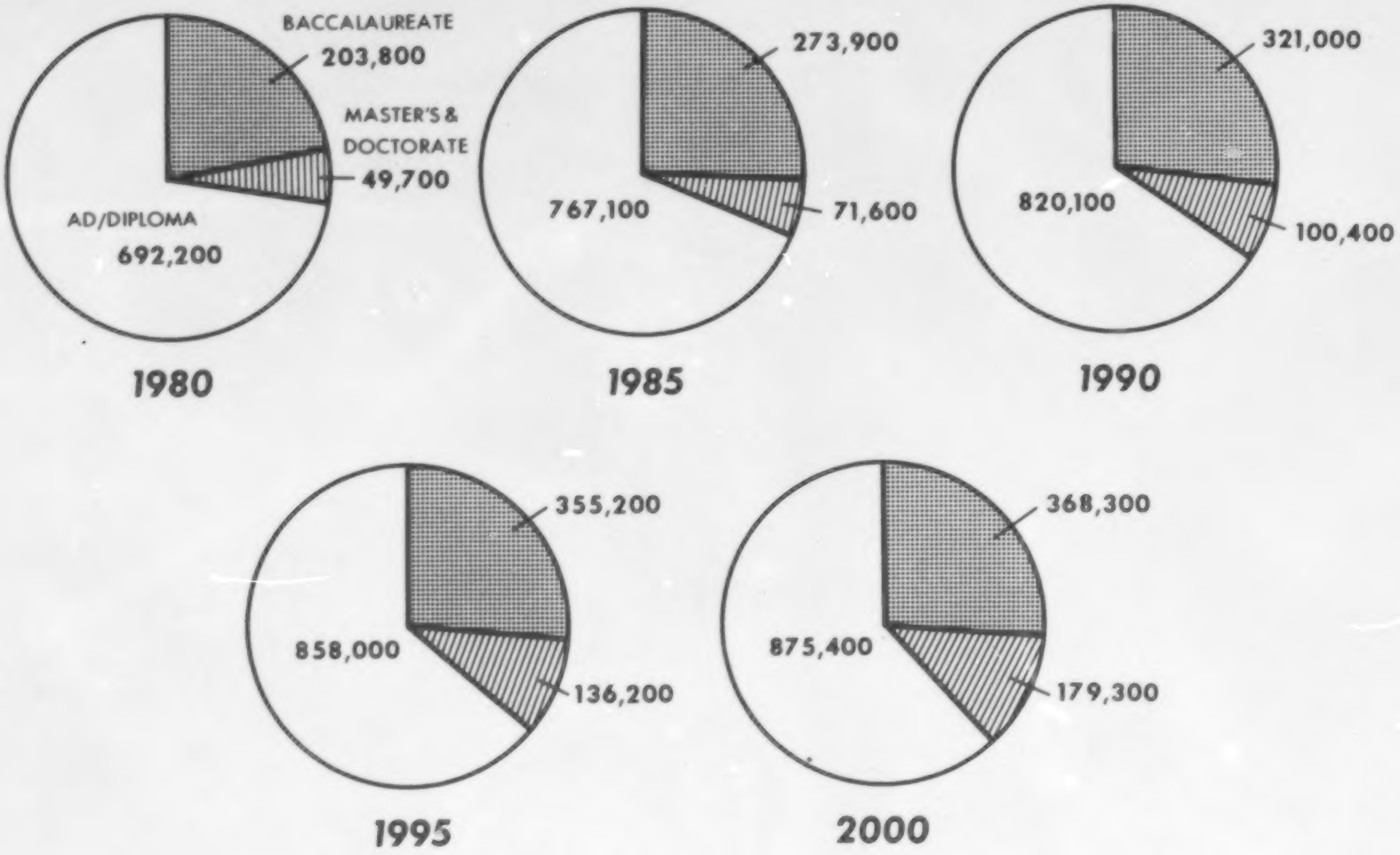
The projections of graduations from basic nursing educational programs resulting from these assumptions appear in tables 22 and 23. In all of the series, it is projected that the number of graduations by the year 2000 will be lower than the 77,000 being graduated currently. Series B, which is the most "optimistic" of the graduation projections, however, shows only a moderate decline following an increase occurring in the 1980's. Series A which provides for no changes in current, recent trends shows a continual decrease until total graduations reach the 1971-72 level of 51,300. Series D projects even further decreases in the overall number of graduates, to levels prevalent in the latter half of the 1960's.

In all cases, however, the "mix" of graduates will be different from that shown for the earlier years. In 1979-80, 48 percent of the graduates were from associate degree programs. In the "baseline," or Series A projections, the number of associate degree graduates represented 59 percent of the total graduates by 1999-2000. Only in the Series C projections, were the number of associate degree graduates less than half the total graduates by the year 2000; they represented about a third of the total graduates.

Projections of Supply to Year 2000

Data from the 1977 Sample Survey of Registered Nurses and the 1977 Inventory of Registered Nurses suggest that the estimates of registered nurse supply included in the Second Report to Congress were too high. Based on the 1977 Sample Survey, it was estimated that, as of January 1, 1977, there were 981,500 employed registered nurses in comparison to the 1,011,000 estimate included in the Second Report. Furthermore, as mentioned earlier, the number

Figure 2. -- Distribution of full-time equivalent registered nurses according to highest educational preparation, (series A) selected years 1980-2000.



Source : Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

of graduates anticipated each year in the Second Report was higher than the actual number graduating during the latter half of the 1970's. This led to projections of supply for future years which were higher than those made at this time. Thus, the current estimate for the number of employed registered nurses as of January 1, 1980 is 1,119,100, or 945,700 on a full-time equivalent basis. This supplants the earlier projections of 1,152,000, or 974,000 full-time equivalent nurses.

Based on the assumptions regarding graduations from nursing education programs outlined above it is anticipated that there will be continual growth in the nurse supply in the next 20 years in all the series presented, although at varying rates. Thus, in the projections based on Series D, which show the least growth, projected supply for 2000 is 1,562,200 (1,336,800 on a full-time equivalent basis). In the Series D projections, while there is an increasing number of nurses throughout the projection period, when considered in relation to the general population, between 1994 and 2000 the growth in the nurse supply just keeps pace with the population growth. On the other hand, the Series B projections show substantially higher growth rates. The estimated total number in the registered nurse supply in Series B by the year 2000 is 1,862,000 (300,000 above the Series D projection), and the nurse-population ratios increase throughout the period. Series A, the "baseline" series, projects a total of 1,666,000 and Series C, 1,707,800 for the year 2000. (See tables 24 to 27.)

Data collected in the 1977 National Sample Survey of Registered Nurses indicated that earlier projections of the number of nurses with higher level educational credentials were underestimated. Thus, currently, it is estimated that as of January 1, 1980, 833,000 nurses in the supply had associate degrees or diplomas as their highest degree; 232,300 had baccalaureates; and 53,800 had master's or doctoral degrees. Under the Series A assumptions, the number with associate degrees or diplomas would increase by 26 percent by the year 2000, as compared to a 49-percent increase in the overall supply. The number with baccalaureates would increase by 83 percent. The number with master's or doctoral degrees, would be 191,000, more than three times higher in 2000 than it was in 1980.

Series C, which assumes a sharp decrease in the associate degree programs but a sizeable increase in the baccalaureate and master's degree programs, shows by the year 2000 only an 11-percent increase in the nurses with associate degrees or diplomas but an increase of more than double the 1980 supply for nurses with baccalaureates (a total of 566,600). The master's or doctoral complement was four times higher than the 1980 supply. Currently, it is estimated that nurses with master's or doctoral degrees constitute about 5 percent of the supply. The projected number of nurses with master's or doctoral degrees by the year 2000, in each of the series, will represent about 12-13 percent of the total nurse supply.

The effect of these national assumptions about graduations and the other factors causing change in the supply on a State-by-State basis are shown in tables 28 to 31. In general, while it is anticipated that some of the States or regions with lower nurse-to-population ratios would have higher increases than those with higher ratios, fairly wide variation from State to State is expected throughout the 20-year projection period.

Factors Affecting the Supply of Licensed Practical Nurses

Data sources on the licensed practical nurse population are much less extensive than those for registered nurses. The 1974 Inventory of Licensed Practical Nurses (Roth, Schmittling, 1977) is the most recent complete descriptive survey of this group of nursing personnel. Based upon this inventory and annual graduation data, it is estimated that 715,000 practical nurses held licenses to practice in 1980. A significant number have been licensed by waiver as States have moved to enact licensing legislation. Of the number licensed, 549,000, or 77 percent, were employed in nursing. The Bureau of Labor Statistics (USDOL, BLS, 1981) reported the unemployment rate for practical nurses at 2.9 percent in 1980.

Graduations from Practical Nursing Programs

Preparation for licensure as a practical nurse is generally offered in postsecondary programs of a calendar year in length. In recent years, a few programs have been established in publicly supported junior or senior colleges. Their curriculums are designed to facilitate career mobility and to permit individuals to defray a part of their educational costs through part-time employment. After a year of study, the individual is prepared to take the examintion for licensure as a practical nurse. At this point the individual may enter the work force or remain in school for a second year to obtain an associate degree and complete the requirements for taking the registered nurse licensing examination. If the individual then completes 2 additional years of study, a baccalaureate degree in nursing is awarded.

Data on practical nursing education programs in the United States compiled annually by the National League for Nursing (NLN, 1980), show that the number of these programs has remained rather constant in recent years. In October 1975 there were 1,315 State-approved practical nursing programs in the United States, with an enrollment of 58,460 students. By October 1979 the number of programs was 1,318, with an enrollment of 52,232, reflecting a decrease in the average enrollment per program from 44 to 40. In 1979, 85 percent of those enrolled in October graduated at the end of the year. A slight decrease was noted in the actual numbers of practical nurse graduates from 1975 to 1979.

Characteristics of the Nursing Population

Like registered nurses, most licensed practical nurses are women (98 percent) and married (60 percent); their median age, as reported in the 1974 Inventory, was 38.8 years. Of those who indicated they were employed in nursing, the 1974 Inventory reported 73.3 percent as working on a full-time basis and 23.5 percent on a part-time basis. As was true for registered nurses, variation existed from area to area in the country in the proportion of those employed of the total nurse population, and in the proportion of those working on a part-time basis. States in the northeastern part of the country tended to show lower proportions of those employed in nursing than the Southern States.

Distribution of the Nurse Supply Among States

The Division of Health Professions Analysis, Bureau of Health Professions, Health Resources Administration, estimated that the number of licensed practical nurses in the nurse work force was 549,300 in 1980 and the full-time equivalent supply, 480,100. Much variation exists from area to area in the proportion of employed practical nurses to the total nurse population and to the proportion of those who worked on a part-time basis. The South Central States had a much higher ratio of practical nurses to potential patients than either the New England or Middle Atlantic States. Higher practical nurse ratios were also noted in the Pacific States. Tables 34 and 35 show distribution of licensed practical nurses within each State.

Employment Characteristics

Preliminary data from the latest National League for Nursing study of employment opportunities for newly licensed practical nurses (NLN, 1981) showed that 88 percent were employed in nursing 6 months after licensure and 3.7 percent, twice that for newly licensed registered nurses, were not employed but seeking work. A significant number, however, reported that they were neither employed nor seeking employment. Some of this group includes individuals who were students in diploma, associate degree, or baccalaureate progams, and chose to take the licensing exam for practical nursing despite the fact that they were continuing their studies preparing to become registered nurses.

Licensed practical nurses work under the supervision of a physician or registered nurse. By far the largest proportion work in institutional settings: 63 percent in hospitals, 17 percent in nursing homes, and 7.5 percent in private duty, including care provided in institutions or in the patient's home. Of the small number working in community settings, the majority were employed in the offices of physicians or dentists.

Rates of Compensation

A number of data sources report information on earnings for both licensed practical nurses and registered nurses. These data are reported in the tables in appendix 2. A review of the data shows that practical nurses generally average about 70 to 80 percent of the earnings of a registered nurse in a staff position. Nurses licensed for the first time in 1979 reported, in the National League for Nursing study of employment opportunities of newly licensed nurses (NLN, 1979), a median annual salary of $9,000. Newly licensed registered nurses reported in that same study a median salary of $12,700.

Projections of the Supply of Licensed Practical/Vocational Nurses

The Model

In addition to requiring data on registered nurses, Section 951 of P.L. 94-63 called for the projection of the supply of licensed practical/vocational nurses in the future for the country as a whole and within States. For these projections, the level of educational preparation would not be relevant since any additional education achieved by practical nurses after licensure would most likely be education preparing for practice as a registered nurse. They would then seek licensure as a registered nurse and become part of the newly licensed registered nurse component in that model.

As noted earlier, the model used to prepare the registered nurse supply projections for this report resulted from refinements made in the approaches used for earlier reports, particularly the one used in the Second Report to Congress March 15, 1979 (Rev.) (USDHEW, 1979). The refinements were largely made possible by the availability of a new data source, the 1977 National Sample Survey of Registered Nurses (Roth et al., 1978). In addition to providing some of the necessary data, the survey also permitted updating of the data base. For licensed practical nurses, however, no such data source is available. The latest information is the 1974 Inventory of Licensed Practical Nurses (Roth, et al., 1977). Because no new data were available to either refine the methodology or update the data base, the model, as well as the data base for the model, used to make the projections for licensed practical nurses in this report are the same as the one used in the Second Report to Congress. A description of the modelling approach and the data base used was included in the prior report.

As was true for registered nurses, projections of licensed practical nurses are made for the nurse population, nurse supply, and full-time equivalent supply. The projections are for the United States as a whole and for each State. Here, too, the same model is used for both "current estimates" and future projections with the "current estimates" based on actual graduations (NLN, 1979) and the projections for the future based on assumptions about the number graduating each year.

Assumptions About Practical Nursing Education Graduations

Two sets of projections were produced for licensed practical nurses based on alternative assumptions about the number of graduates from practical nursing programs from the year 1985 on. Since the most likely group from which the practical nurse student today might be drawn is the 17- to 34-year-old females (as was true for the associate degree RN students), the number of practical nurse enrollees was considered in relation to that population cohort. For Series I, it was assumed that the proportion of the 17- to

34-year-olds enrolled in practical nurse programs would continue to decline as it had in the recent past until 1985-86, at which time it would level off. For Series II, the declining trend was continued after 1985-86. Graduations were determined from these enrollments based on the latest graduation rate which was kept constant throughout the projection period. The graduation projections appear in table 32. In both series, the number of graduates decreases throughout the projection period. In Series II, the decrease is substantial. The conversion of these new graduates to newly licensed practical nurses was determined from the latest State Board examination passage rates available at the time the data were compiled. These rates were kept constant throughout the projection period, similar to the treatment of the rates in the registered nurse projections.

Projections to Year 2000

As was the case for registered nurses, the assumptions regarding future graduations, coupled with fewer actual graduations than those anticipated in the latter part of the 1970's, lead to lower projections of the licensed practical/vocational nurse supply for this report than were in the Second Report. At this time, it is estimated that as of January 1, 1980, there was a supply of 549,300 licensed practical/vocational nurses, or 480,100 on a full-time equivalent basis. By 1990, it is projected, using the Series I assumptions, that there will be 666,900 practical nurses in the supply and 661,500 using Series II assumptions. By the year 2000, the projected supply under Series I assumptions is 755,400 and 694,500 under Series II assumptions. When the supply of licensed practical nurses is examined in relation to the projected population in the country, the Series I projections show a very slow rate of growth between the mid-1980's and the year 2000. The Series II projections show almost no change during this period and a slight decline toward the end of the period (table 33). The relationship between the national assumptions about the projections of graduations and other factors such as migration and "net losses" in the State supply of licensed practical/vocational nurses is shown in tables 34 and 35.

Chapter 2.

REQUIREMENTS FOR NURSING PERSONNEL

The *Second Report to Congress* provided an extensive review of several different approaches taken to determine the requirements for nursing personnel, particularly registered nurses.[1/] The report indicated that the differing approaches taken were designed for different purposes and to provide different interpretations of "requirements." In this report, two of the approaches are reexamined. The data are updated where it is possible to do so. Some of the assumptions identified in the earlier versions are revised on the basis of consideration of later data and to extend the projections further into the future than they were in the earlier versions.

[1/] For a full description of the process involved in the initial model development, see Second Report to the Congress, March 15, 1979 (Revised). Nurse Training Act of 1975. DHEW Pub. No. HRA 79-45. Government Printing Office, Washington, D.C., pages 7-43. See also Elliott, J. E., and Kearns, J. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services. Final Report*. DHEW Pub. No. HRA 79-16. U.S. Government Printing Office, Washington, D.C., 1978, chapter VI; and *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: National Conferences*. DHEW Pub. No. HRA 77-3, U.S. Government Printing Office, Washington, D.C., 1976. The Panel of Expert Consultants was a 21-member body which included representation from the various fields of nursing practice and types and levels of nursing education programs. In addition, the body included representation from the major professional associations (both nursing and medical) and from the fields of higher education, hospital administration, public health and economics.

One of the two approaches reconsidered is the model developed by Vector Research, Inc. to identify the impact of health systems changes on the requirements for registered nurses (Doyle, 1978) using the so-called "baseline" scenario. The other is the set of projections which was developed as a result of the criteria established by the Western Interstate Commission on Higher Education Panel of Expert Consultants (Elliott, 1978). In both cases, the time frame for the projections was extended.

The Historical Trend-Based Model

The model originally formulated by Vector Research, Inc. was revised and updated by Bureau of Health Professions staff. Future national requirements are estimated for full-time equivalent and total number of registered nurses through the consideration of requirements for registered nurses occuring in the major sectors of the health care system where registered nurses are employed: non-Federal short-term general and other special hospitals, all other hospitals, nursing homes, physician offices, community health, health maintenance organizations (HMOs), nurse education and private duty, and miscellaneous settings. Currently, in this updated version of the model, the projections are based upon data that fall into three major categories: general civilian and HMO population; provided services on a per capita basis (e.g., inpatient days, outpatient visits, etc.), and numbers of full-time equivalent registered nurses utilized per unit of provided services or time.

The model operates internally with each of the major sectors of the health care system in one of two methods. The magnitude of the population taken with the per capita demand for provided services determines the total amount of services provided; the number of full-time equivalent registered nurses utilized per unit of provided service is applied to that result to determine the total estimated number of required full-time equivalent registered nurses. If the per capita provided services is not known, the total estimated number of full-time equivalent registered nurses is calculated by extending historical trends on the numbers of nurses employed. The former method is used to estimate approximately two-thirds of the registered nurse requirements.

A large number of data sources were drawn upon to establish the analytical relationships necessary to estimate future RN requirements, including data from the Bureau of the Census; Office of Health Maintenance Organizations, PHS, DHHS; the American Hospital Association; National Center for Health Statistics, DHHS; Health Resources Administration, DHHS, DHHS; the American Nurses' Association; the American Medical Association, and the National League for Nursing. While all data sources used are important to the operation of the model, the 1977 Sample Survey of Registered Nurses (Roth, et al., 1978) and the 1972 Inventory of Registered Nurses (Roth, et al., 1974) were especially significant because, in great part, they essentially form the basis for the projections of future estimated RN requirements.

Assumptions of the Model

Perhaps the dominant assumption of the model is that historical trends (including the most recent data available) determine the future trends that will take place in the health care system. The degree to which this assumption has validity is dependent on the degree to which the system does not undergo significant change in whole or in part. For example, the onset of the Medicare program in the late 1960's produced a marked change in the care provided to older Americans. Presently, if national health insurance were to be initiated (or some other major change in the system under which health care is delivered), a similar gross effect on provided services could occur and distort the historical trends applied in the model.

As indicated earlier, there are two types of projection techniques employed in the model. The first type uses both historical trends in provided service, and utilization of registered nurses per unit of provided service. The second uses the historical trend of employed registered nurses per unit of time. The first is employed in the areas of short-term general and other special hospitals, physician offices, nursing homes, and some areas of community health. The remainder of the nursing employment areas employ the second technique. Each of these areas projected would be susceptible to changes in the health care system, both from the standpoint of direct impact on specific areas of registered nurse employment and from indirect effects (e.g., a significant increase in HMO enrollment could well decrease the services provided in hospitals and physician offices that are apart from HMOs).

Projections to the Year 2000

As can be noted from a review of the data from the Vector Model in the Second Report, the total requirements for full-time equivalent registered nurses in the current revised and updated model are somewhat higher than those indicated by the original Vector model for the baseline case.[2] For 1985, the last year for which projections were made by Vector Research, Inc. with the original model, current projections of requirements call for 1,113,000 full-time equivalent registered nurses in contrast to the 1,003,000 in the earlier version.

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[2] The baseline case assumes no introduction of national health insurance, an HMO growth which is a continuation of historical trends, and a utilization of full-time equivalent registered nurses per provided services based on historical trends. Also, vacancies in hospitals are not considered.

The major cause for the changes in the numbers projected lies in the utilization of full-time equivalent registered nurses per unit of provided service. This has shown a significant increase since the data were originally developed in the earlier version of the model. Therefore, while current trends for provided services are somewhat below those previously anticipated, the number of registered nurses required to provide those services has increased sufficiently to more than offset the diminished rate of services provided. For example, the current rate of registered nurse utilization in the majority of nursing homes was 40 percent greater than that indicated by the earlier data in the model before its revision and update. This phenomenon was experienced as well in most other areas (including hospitals) of the health care system employing registered nurses. Given a continuation of the present historical trends, this model projects a requirement for 1,503,000 full-time equivalent registered nurses by the year 2000.

However, changes such as those noted above can obviously have a significant effect on estimated requirements for registered nurses in the future. The Bureau of Health Professions is currently pursuing refinements to the present model and is also anticipating use of data from the 1980 National Sample Survey of Registered Nurses, which should clarify the employment trends of registered nurses and thereby afford a better basis for estimating future requirements for registered nurses.

Projection of State Requirements for Registered Nurses

In addition to determining national requirements, this approach is used to project requirements at the State level. The model employed to estimate the future requirements for full-time equivalent registered nurses at the State level is conceptually and structurally the same as that used at the national level. The same trend identifications for the same employment settings required for the national model were identified for each of the 50 States and the District of Columbia.

The reliability of the projections at the State level is affected by a number of factors. The quality of the data themselves present the major concern. A number of the sources used in the data analyses are sample surveys, and the variability of an estimate can increase markedly as the size of the sample diminishes. Even those data sources which are the result of complete or near complete enumerations suffer at greater levels of disaggregation because significant groups of data may have been omitted or not collected uniformly at some point. The impact on the State model is usually manifested in two ways: the growth (or decline) of provided services at the State level is substantially different from that of the Nation, and the number of full-time equivalent registered nurses used per unit of provided services or per unit of time is inordinately large (or small) when compared to nationwide utilization.

Nonetheless, even with a number of such anomalies in the model trends, reasonable estimates of the requirements for registered nurses into the early 1980's are provided. After this early period, the requirements estimates can only be considered as indicators of the relative changes in the magnitude of the requirements. Included in this report are projections of State requirements to 1990. The aggregation of these State requirements varies somewhat from the overall national requirements estimates made, although the differences are relatively minor. In 1980 the percentage difference between the State aggregate and the national projection is 1.4 percent. This difference increases to 4.1 percent by 1990.

The Criteria-Based Model

The second of the two updated approaches arose out of a project which established a design to determine nursing requirements through use of an analytical framework for developing assumptions and criteria relevant to considerations of the requirements. The model was developed by the Western Interstate Commission for Higher Education (WICHE). Subsequent to the development of this model, WICHE established a Panel of Expert Consultants in 1977 to develop assumptions and criteria considered applicable, from a national standpoint, to a 5-year projection of nursing requirements by State and for the country as a whole. These projections, for 1982, were reported in the Second Report to the Congress.

In recognition of recent changes in the health care environment and the need to extend the requirements further into the future, the Bureau of Health Professions determined that the criteria and assumptions established by the Panel should be reviewed and updated. Therefore, in November 1980, a workshop was held to review the particular areas of acute care, long-term care and community health. Among the workshop participants were registered nurses involved in services and education, hospital administrators, and other leaders in the health field, including some persons who had participated in the original WICHE Panel. In their review of the Panel's criteria, the workshop participants looked toward their applicability to the year 1990.

Assumptions of the Model

Central to this modeling approach is the establishment of health care goals which are used as the underlying determinants of nursing requirements. Consequently, requirements in this approach refer to the number and levels of educational preparation of nursing personnel needed to meet a particular set of health care goals. The model requires that a planning group make the determinations. This planning group, while taking into account experience and current practice, uses its expert judgment to develop the criteria in the form of staffing and service utilization ratios which will best accomplish the developed health care goals. Nurses prepared in associate degree and diploma programs were considered as a single group because they are prepared to function in institutional settings while those from baccalaureate programs are prepared for community settings as well.

Two sets of criteria were developed by the original Panel of Expert Consultants, and were carried forward in the present work of the workshop participants. These were identified as the "lower bound" and the "upper bound." The expection was that all States would meet the lower bound by the year for which the criteria were being considered and that many would move toward meeting or exceeding the upper bound in the time period.

Figure 3.-- Criteria for Nurse Staffing and RN Educational Preparation in the Criteria-Based Model, 1990
(Full-time Equivalent Nursing Personnel)

Field of employment	Criteria for Staffing						Criteria for RN Educational Preparation							
	Lower Bound			Upper Bound			Doct. (%)		Master's (%)		Bacc. (%)		AD/DIP (%)	
	RNs	LPNs	Aides	RNs	LPNs	Aides								
	Per 100 Patients			Per 100 Patients			L	U	L	U	L	U	L	U
Direct Client Care (DCC)														
Inpatient Services														
General Units	56.5	8.0	16.0	81.0	5.0	15.0					30	50	70	50
Rehabilitation Units	56.5	8.0	16.0	81.0	5.0	15.0					30	50	70	50
Newborn Units	49.0	12.0	12.0	56.5	12.0	12.0					20	50	80	50
Critical Care Units	324.0	0.0	0.0	405.5	0.0	0.0					50	60	50	40
Extended Care Units	20.0	20.0	20.0	30.0	20.0	20.0					30	50	70	50
Long-term hospitals (psychiatric)	13.0	10.0	30.0	22.0	10.0	30.0					50		50	
Short-term hospitals (psychiatric)	65.0	0.0	16.0	81.0	0.0	20.0					50	60	50	40
Other Hospital Services														
Operating Room	2.0 RNs per 1000 operations (10 RNs/0 LPNs/3 Aides)			3.0 RNs per 1000 operations (10 RNs/0 LPNs/2 Aides)							20		80	
Emergency Room	0.48 RNs per 1000 visits (10 RNs/0 LPNs/5 Aides)			0.96 RNs per 1000 visits (10 RNs/0 LPNs/5 Aides)							50	60	50	40
Outpatient Clinics	0.11 RNs per 1000 visits (10 RNs/5 LPNs/5 Aides)			0.23 RNs per 1000 visits (10 RNs/5 LPNs/5 Aides)					10		80		10	
Nursing Homes	27	13.5	17.5	30	15	19.5					50		50	

Figure 3.-- Criteria for Nurse Staffing and RN Educational Preparation in the Criteria-Based Model, 1990
((Full-time Equivalent Nursing Personnel)

Field of employment	Criteria for Staffing		Criteria for RN Educational Preparation			
	Lower Bound	Upper Bound	Doct. (%)	Master's (%)	Bacc. (%)	AD/DIP (%)
Physicians' Offices	2.0 RNs per 10 MDs (10 RNs/3 LPNs/0 Aides)	2.2 RNs per 10 MDs (10 RNs/2 LPNs/0 Aides)		25	25	50
Community Health						
I. Home Visits						
A. Home Health Care	7% of number of hospitals discharges x 14 visits/person/year x $\frac{\text{lower bound}}{6}$ or $\frac{\text{upper bound}}{4}$ visits/RN/day plus 3% of the population age 65-74; and 10% of the population 75 and over x 14 visits/person/year x $\frac{\text{lower bound}}{6}$ or $\frac{\text{upper bound}}{4}$ visits/RN/day Lower bound staffing mix: 10 RNs/0 LPNs/5 Aides Upper bound staffing mix 10 RNs/0 LPNs/4 Aides			25	60	15

Figure 3.-- Criteria for Nurse Staffing and RN Educational Preparation in the Criteria-Based Model, 1990
(Full-time Equivalent Nursing Personnel)

Field of employment	Criteria for Staffing		Criteria for RN Educational Preparation			
	Lower Bound	Upper Bound	Doct. (%)	Master's (%)	Bacc. (%)	AD/DIP (%)
B. General Home Visits	4 visits/persons/year $\frac{\text{lower bound}}{6}$ or $\frac{\text{upper bound}}{4}$ visits/RN/day x each high-risk group finding: 1. Maternal Child Health a. No. of mothers without prenatal care b. No. of Infant Deaths 1 month - 1 year c. 10% of births: 5% to high-risk mothers 5% other infant follow-up d. 5% of other childhood morbidity 2. Abuse: 5% of the 5% incidence of all abused population 3. Communicable Disease: a. Active TB b. Hepatitis 4. Chronic Illness: a. 3% of population 17 years and older for general chronic illness (hypertension, diabetes, obesity, etc.) b. .5% of population 17 years and older with mental health-related illness, drug abuse, alcohol			25	75	

Figure 3.-- Criteria for Nurse Staffing and RN Educational Preparation in the Criteria-Based Model, 1990
(Full-time Equivalent Nursing Personnel)

Field of employment	Criteria for Staffing		Criteria for RN Educational Preparation			
	Lower Bound	Upper Bound	Doct. (%)	Master's (%)	Bacc. (%)	AD/DIP (%)
	5. Environmental One-half of 1% total population					
II. Clinic Visits A. Community Public Health Clinics	3 visit/hour/RN 8 hour day with attempt to estimate current number of clinic visits, or			10	80	10
	20,000 FTE	30,000 FTE				
	Lower bound staffing mix: 10 RNs/1 LPN/2 Aides	Upper bound staffing mix: 10 RNs/0 LPNs/3 Aides				
B. Community Mental Health Clinics	1 visit/hour/RN			100		
III. Occupational Health	1 RN per 500 employees	1 RN per 300 employees		25	75	
IV. School Health	1 RN per 1,000 students	1 RN per 750 students		30	70	
V. Other Licensure and Regulation						

Figure 3.-- Criteria for Nurse Staffing and RN Educational Preparation in the Criteria-Based Model, 1990
(Full-time Equivalent Nursing Personnel)

Field of employment	Criteria for Staffing		Criteria for RN Educational Preparation			
	Lower Bound	Upper Bound	Doct. (%)	Master's (%)	Bacc. (%)	AD/DIP (%)
Clinical Specialists	RNs Per 100 Patients	RNs Per 100 Patients				
Large teaching (more than 400 beds)	3.0	5.0		100		
Small (less than 100 beds), and all long-term hospitals	2.0	4.0		100		
All other short-term hospitals	2.0	4.0		100		
Nursing homes	2.0	2.0		100		
Hospital ambulatory care	1 per 20 DCC RNs	1 per 20 DCC RNs		100		
Community health nursing	1 per 20 DCC RNs	1 per 10 DCC RNs		100		
Administrative Positions						
Executive/Principal Nurse Administrator						
Large teaching (more than 400 beds)	1 Director of Nursing per institution		100			
All other hospitals	1 Director of Nursing per institution		2	98		
All hospitals	1 Assistant or Associate per 200 beds			100		
Nursing homes	1 Director per nursing home			100		
Community health nursing	1 Director per agency		5	95		
Mid-level Nurse Administrators/Managers						
All hospitals	1 Head Nurse per 36 beds			25	75	
All hospitals	4 Supervisors for the first 100 beds plus 1 each additional 100 beds			50	50	
Nursing Homes	---					
Community Health Nursing	1 RN per 10 DCC RNs			50	50	

Figure 3.-- Criteria for Nurse Staffing and RN Educational Preparation in the Criteria-Based Model, 1990
(Full-time Equivalent Nursing Personnel)

Field of employment	Criteria for Staffing		Criteria for RN Educational Preparation			
	Lower Bound	Upper Bound	Doct. (%)	Master's (%)	Bacc. (%)	AD/DIP (%)
Inservice Instructors						
Hospitals more than 400 beds	6 per institution	10 per institution		50	50	
Hospitals 100-400	3 per institution	5 per institution		50	50	
Hospitals less than 100 beds	1 per institution	1 per institution		50	50	
Nursing homes	1 per institution	1 per institution		100		
Community health nursing	1 per agency					
(staff development)	(for large agencies with more than 100 RNs)					
	2 more per agency		100			
Researchers and Consultants						
Hospitals	1 RN per teaching hospital			75	25	
Physicians Office	0.1 RNs per 10 DCC RNs	0.3 RNs per 10 DCC RNs	50	50		
Community health nursing						
a. Researchers	0.5 RNs per 10 DCC RNs	0.5 RNs per 10 DCC RNs	10	90		
b. Consultants	0.3 RNs per 10 DCC RNs	0.03 RNs per 10 DCC RNs	(100% Doct.-upper)			
Nursing Home	0.1 RNs per 10 DCC RNs	0.3 RNs per 10 DCC RNs	50	50		
(Institutionally-based personnel)	0.75 RNs per institution				50	50
School of Nursing						
Administrators						
Doctorate, Master's, Bacc.	1 per school and 1 per program (first 200 students),					
Associate, diploma	and 1 per each additional 200 students		100			
LPN	1 per program		25	75		
Faculty				100		
Doctorate	1 RN per 6 students	1 RN per 4 students	100			
Master's	1 RN per 6 students	1 RN per 4 students	75	25		
Baccalaureate	1 RN per 8 students	1 RN per 6 students	20	80		
Associate	1 RN per 10 students	1 RN per 8 students	10	90		
Diploma	1 RN per 10 students	1 RN per 8 students	10	90		
LPN	1 RN per 10 students	1 RN per 8 students		60	40	

Figure 3.-- Criteria for Nurse Staffing and RN Educational Preparation in the Criteria-Based Model, 1990
(Full-time Equivalent Nursing Personnel)

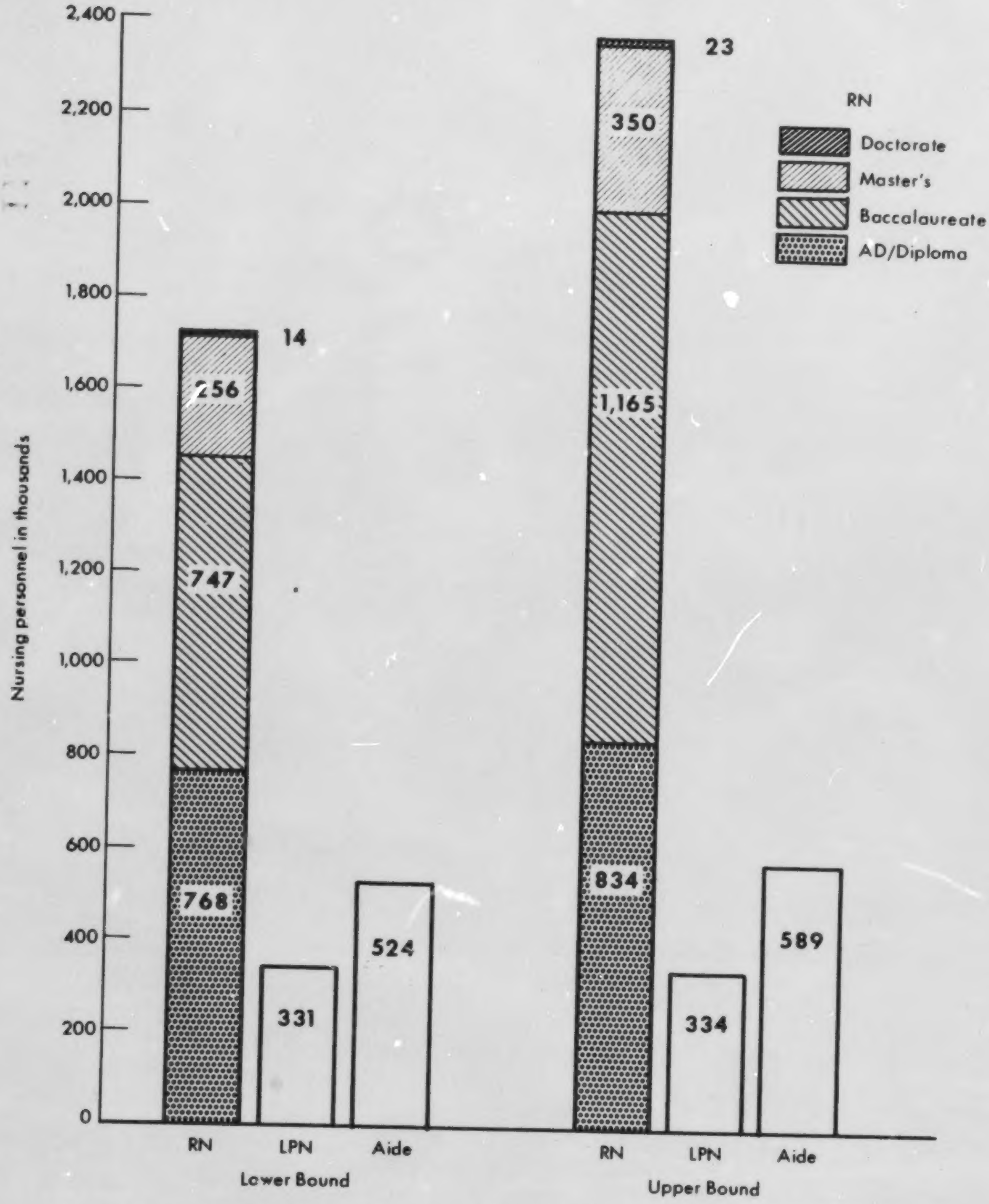
Field of employment	Criteria for Staffing		Criteria for RN Educational Preparation			
	Lower Bound	Upper Bound	Doct. (%)	Master's (%)	Bacc. (%)	AD/DIP (%)
Private Duty	1 RN per 10,000 pop.	0.9 RNs per 10,000 pop.			20	80
Health-Related Organizations	0.4 RNs per 10,000 pop.	0.5 RNs per 10,000 pop.	10	90		

Note: Nurse Practitioners are prepared at the masters level and the percentage distribution by field of employment is as follows:

Nurse Practitioners	Lower Bound	Upper Bound	Doct. (%)	Master's (%)	Bacc. (%)	AD/DIP (%)
Hospital Ambulatory Care	10% of hosp. amb. care RNs	13% of hosp. amb. care RN's		100		
Physicians' offices	15% of RNs in physicians offices	25% of RNs in physicians offices		100		
Community health	10% of RNs in public health	10% of RNs in public health		100		
Nursing homes	40% of clin. specialists in nursing homes	50% of clin. specialists in nursing homes		100		

Source: Proceedings: Evaluation and Updating of the Criteria Established by the WICHE Panel of Expert Consultants, November 17-19, 1980, Bethesda, Maryland, Bureau of Health Professions, HRA, USDHHS and Elliott, J. E. and Kearns, J. Analysis and Planning for Improved Distribution of Nursing Personnel and Services, Final Report, 1978, DHEW Publication No. (HRA) 79-16.

Figure 4. -- Projected requirements of full-time equivalent nursing personnel according to criteria-based model by educational preparation, 1990.



Source : Prepared by Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services from criteria presented in Figure 3.

While the workshop participants reviewed and revised the criteria for the acute care, long-term care, and community health areas, they did not identify the trends to be anticipated by 1990 for utilization of hospital facilities and nursing homes, nor in population growth and distribution. Nor did they evaluate the overall nursing requirements estimates that would result from the established criteria.

The overall nursing requirements were developed by the Division of Health Professions Analysis. To permit comparisons between the data generated by the historical trend-based model and the criteria-based model, the same trends of services provided by hospitals and nursing homes, as well as the same population trends developed for use in the projections for the historical trend-based model, were used in developing the nursing requirements for this criteria-based model.

Projections to the Year 1990

As pointed out earlier, the workshop participants were looking toward 1990 in their review of the Panel criteria. Therefore, the requirements projections made as a result of these criteria are for 1990, both on a State and national basis. Unlike the historical trend-based model, this approach does not allow for data to be prepared for each of the intervening years between the present and the future date considered because the criteria were specifically established with the latter date in mind. The criteria do include, however, the level of educational preparation required for the registered nurse and the utilization of the practical nurse and the nursing aide. For the historical trend-based model, consideration was given to developing only a projection of the overall requirements for registered nurses.

The overall requirement for full-time equivalent registered nurses in the lower bound for 1990 according to the criteria-based model was 1,784,000; in the upper bound, it was 2,373,000. Full-time equivalent licensed practical nurses in the lower bound was 331,000, and in the upper bound, 334,000. The aide requirements were 524,000 and 589,000, respectively.

Requirements--A Comparative Analysis

As the approaches described above for the historical trend-based model and the criteria-based model would suggest, significant differences in the requirements projections from each of these models will be noted. The earlier material on the historical trend-based model points out that there are no allowances in the projections for changes in the trends as they are considered for the future. Also, the requirements projections presently developed from the historical trend-based model is an extrapolation of present employment trends without taking into account any possible short-falls such as vacant positions. The requirements projections in the criteria-based model are derived from a set of criteria developed by a planning group using its expert judgment on what would be the most appropriate use of resources to accomplish a series of health care goals which they have developed. An examination of the two different sets of projections demonstrates the main sources of difference between the two approaches.

In summary, these differences in projected nursing personnel requirements for 1990 between the criteria-based and historical trend-based models can be traced to differences in the approach to forecasting future needs. The criteria-based model begins with a determination by the study panel of desirable, reasonable, and achievable health care goals for the future and then attempts to determine nursing staffing according to education preparation and service utilization that would be most appropriate to meet these goals. The historical trend-based model has as a principal assumption that historical population trends demand for services and staffing are primary determinants of future trends, and hence will be a main influence on nursing personnel requirements. The extent to which each of these models might provide a projection of the total number of full-time equivalent registered nurses required in 1990 would depend on how much of a determinant of future requirements historical trends might be; the availability of a pool of nursing personnel to fulfill requirements, and a willingness to substitute for historical patterns expert judgment of what might be desirable, achievable, and reasonable for the health field.

The group developing the criteria for the criteria-based model anticipated that all States, and therefore the country as a whole, would meet the lower bound criteria by 1990. The projections developed as a result of those criteria are used in this examination. The historical trend-based model results showed only registered nurses; therefore the data examined here does not take into account licensed practical nurse or aide requirements projections developed in the criteria-based model. In addition, the data in this comparative analysis do not consider educational preparation of registered nurses, since the historical trend-based model does not take that into account.

On an overall basis, for 1990, the criteria-based model projected a need for 1,784,400 full-time equivalent registered nurses, 43 percent above the

1,245,400 projected requirements for 1990 in the historical trend-based model. The basis for this difference is of particular note. Both sets of projections are fairly close when one considers the projections for hospital-employed nurses, a difference of 4.0 percent between the projections in each of the models. Here, apparently, the consideration of what might be appropriate staffing patterns for 1990 was somewhat similar to the projection from extrapolated trends of those employed in relation to the services provided. In the nursing education area, the criteria-based model, using projections of enrollment based on the assumptions included in the supply model and faculty-to-student criteria developed by the Panel of Expert Consultants, projected a requirement for 37,700 full-time equivalent faculty and school administrators in comparison to the 47,100 in the historical trend-based model. The latter was based on trends in those employed.

The major differences between the two projections were in the nursing home and community health areas. The projection based on the criteria established for registered nurses staffing nursing homes by those assembled for the November 1980 workshop was five times higher than the projection for 1990 from the historical trend-based model. The nursing home criteria considered by the November workshop participants were promulgated on a fundamental change in the approach to staffing nursing homes from the provision of the traditional, custodial, type care to an assumption of an increase in the therapeutic content of nursing care. The group considered as outcomes of the staffing pattern they envisioned for nursing homes such improvements in care as reduction of incontinence, maintenance of skin tone, reduction in the number of contractions, improved oral care, increased discharge rate, closer monitoring of medication effects, and reduction in complications. They also considered an increase in surveillance of nutrition and its effectiveness, and an increase in family supported services, as well as an increased component of staff training since the group believed that much of the present auxiliary staff is minimally trained for the job.

The final criteria and projections of registered nurses in nursing homes also reflect considerations of the proportion of nursing home residents that might be considered in need of acute care as a result of both early discharges from hospitals and a practice of maintaining residents in the nursing home when they become acutely ill instead of the previous practice of transferring them to hospitals. Thus, it was premised that about one-third of the residents might be in need of acute care and the staffing in the nursing home would need to take this into account. To care for these residents, staffing requirements would be more like that of acute care facilities, requiring 3.6 total nursing hours of care per patient day with about two-thirds of this registered nurse care. For the remaining residents, to provide the therapeutic nursing care envisioned, it was determined that there was a need for 2.5 total nursing care hours with about one-third to be delivered by registered nurses (Proceedings, 1980). At present, according to a 1977 study, about 12 percent of the full-time equivalent nursing personnel in nursing homes are registered nurses (USDHHS, NCHS, 1979). Achieving this level of care for a rapidly growing elderly population has profound implications for nursing but more importantly for the American public who must ultimately make decisions regarding allocation of national resources.

For the community health area, the projection from the criteria-based model was more than twice that of the historical trend-based model. Among the factors the group saw as requiring increased levels of nursing care in the community health setting, were early discharges from hospitals and the aging population. Not only would persons tend to live longer and be subject to more chronic illnesses, they would also be more likely to live alone and need more professional support to do so. The impact noted from these factors was an increase in the proportion of the population to be helped with home visits, the number of home visits to be made, and the time these visits would take, thus necessitating increased levels of staffing.

It should be noted that no attempts were made to examine specifically what effects current cost-efficient ways of delivering and obtaining health care would have on requirements for nursing personnel. Various interventions could shift the need for nursing care from one setting to another. Thus, the transfer of care from the hospital to a less costly setting, such as community health agencies and home care, could result in the hospital becoming an even more intensive care setting requiring a higher ratio of highly skilled personnel per patient, even though there could be fewer beds and overall staff. Concomitantly, the shift to a less costly setting would affect the skill level required for nursing personnel in these settings since they tend to be staffed, on the average, with more highly skilled personnel than those employed in hospitals. Further, concentration on prevention in health care creates a transfer of need for health personnel rather than a direct increase in requirements.

Efforts currently underway to stimulate competition in the health care industry could also affect nursing manpower requirements. However, it would be premature to speculate on the nature or extent of this influence.

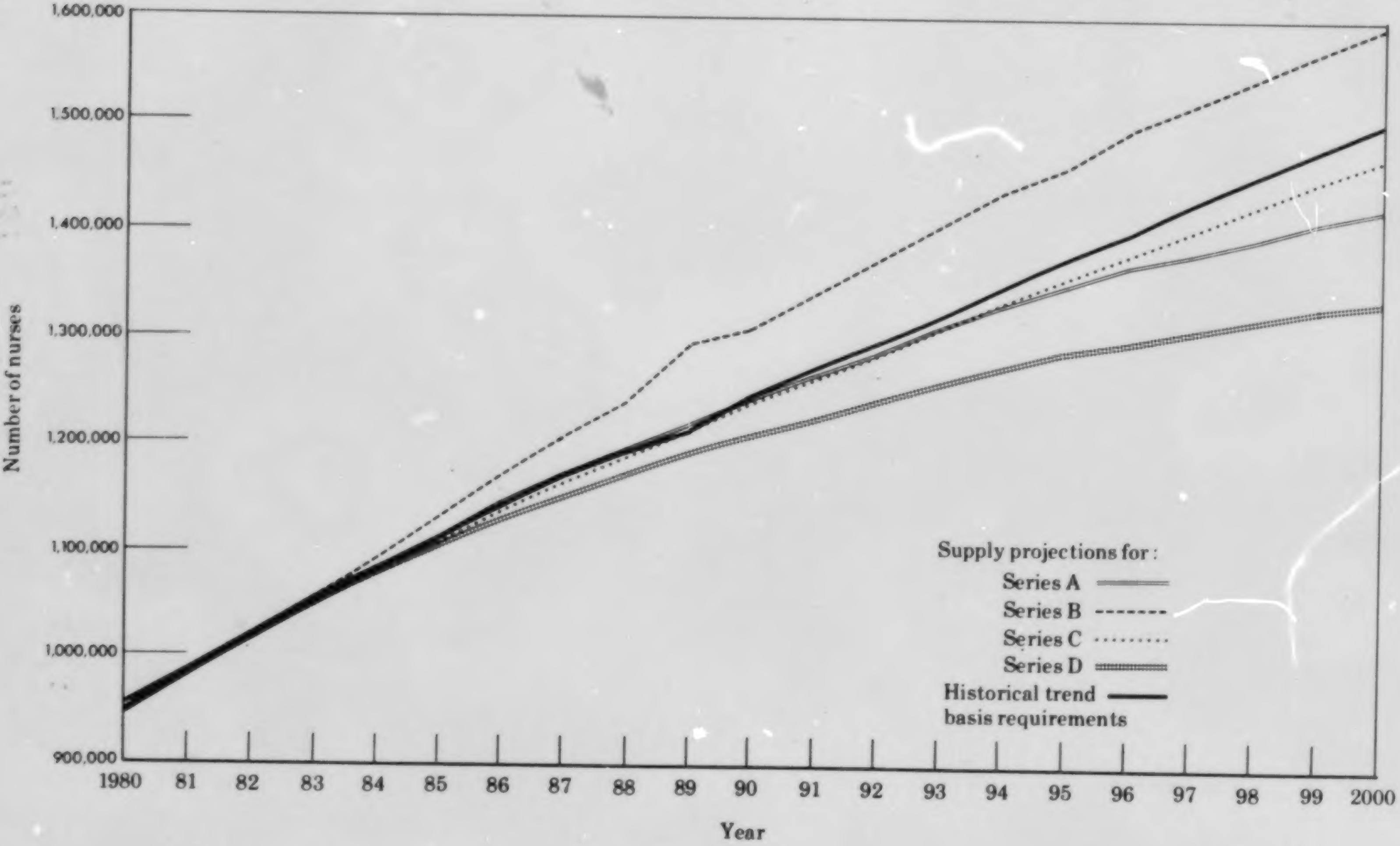
A Comparison of National Future Supply and Requirements

The various alternative assumptions and considerations reviewed for this report led to the provision of two sets of requirements projections for registered nurses based on two different types of approaches to the development and interpretation of requirements and four sets of supply projections based on alternative assumptions about the numbers and types of graduates that might be available. The projections for full-time equivalent registered nurses for 1990 and 2000 are summarized below:

	Requirements		Range of
Year	Model	Estimates	Supply Projections
1990	Historical Trend-Based	1,245,400	1,206,800-- 1,307,800
	Criteria-Based		
	Lower Bound	1,784,400	
	Upper Bound	2,440,200	
2000	Historical Trend-Based	1,502,900	1,336,800-- 1,593,600

In looking first at the historical trend-based model, the data suggest that the requirements projection for 1990 falls somewhere in the middle of the range of supply projections. The lower limit of the supply projections is based on the assumptions made on graduations in Series D, a rather constrained view of what might occur in nursing education. The upper limit of the supply projections is based on the Series B assumptions about graduation, the most optimistic of the views of nursing education. It essentially sees the level

Figure 5. -- Projections of supply of full-time equivalent registered nurses according to four sets of assumptions about nursing school graduations and projections of requirements from historical trend-based model, 1980-2000.



of graduations reverting back to the trends of the early 1970's with actual growth in the numbers of graduates in the 1980's. This is a condition generally not considered likely today given the competition from other occupations for women seeking career education in post-high school settings and the diminishing pool from which the student body can come. The Series A graduation projections, based on the maintenance of recent trends in the attraction of students to nursing education, is perhaps the best of the four series to use for comparison purposes to the historical trend-based requirements projections since neither envisions any major changes in the current trends. A comparison between the Series A supply projections and the historical trend-based requirements projection for the year 1990 shows that both projections are about the same, 1,241,500 full-time equivalent nurses in the supply as compared to 1,245,400 required. Looking further into the future, however, to the year 2000, a different picture emerges. Here, it is only in the Series B projections that the requirements are not greater than the supply. In Series A, it is projected that there will be 1,423,000 full-time equivalent registered nurses in the supply as compared to the historical trend-based model requirements projection of 1,502,900.

As can easily be seen from the figures quoted earlier, the requirements projections for registered nurses from the criteria-based model far exceed the projections of supply. The fact that this is a result of the basic changes the group believed were necessary to make in the delivery of nursing care is evident when one examines the data for all nursing personnel:

	1990	
	Criteria-Based Model Requirements (Lower Bound)	Range of Supply Estimates (FTE)
Total Registered Nurse	1,784,000	1,206,800-1,307,800
AD/Diploma	767,600	781,600-848,000
Baccalaureate	747,500	321,000-354,200
Master's and Doctorate	269,300	100,400-105,600
Licensed Practical Nurse	331,000	578,500-583,200
Nursing Aide	524,000	Not available

No projections are made of the supply of nursing aides since these individuals are primarily trained on-the-job and it is assumed that the supply needed would come from those available in the general labor force. However, in reviewing the above data, it should be noted that currently there are about 1,000,000 nursing aides at work. (The Bureau of Labor Statistics, DOL, in their recent manpower projections estimated that in 1978 there were 1,037,000 employed.) Given those data, it would appear that the 524,000 full-time equivalent nursing aide positions projected as required in the criteria-based model represents a decrease from current employment levels. The licensed practical nurse supply projections suggest that the supply will contain about 66 to 73 percent more practical nurses than will be required, on a full-time equivalent basis, according to the criteria-based model. In terms of those registered nurses whose highest level of educational preparation is an associate degree or diploma, the supply and the requirements would be roughly in balance or the supply would be slightly greater than needed, depending upon the assumptions about graduations.

Therefore, the major lack noted between the projected available supply and requirements, according to the assumptions and criteria included in the criteria-based model, is for registered nurses with baccalaureate and master's or doctoral degrees. A comparison between the baccalaureates in the supply and those required indicates that the supply would be less than half of what would be required. For the master's or doctoral group, the supply would only be about a third of what would be required.

A Comparative Review of Future Supply and Requirements in States

The previous material centers on the relationship between the requirements projections and between the supply and requirements from a national standpoint. It is important, however, to note the impact on the States of the various assumptions. While it is found on a national basis that one type of relationship exists, it is highly probably that a particular State may show exactly the opposite, since a considerable amount of variation exists from State to State. State projections were made for all the areas discussed previously on a national basis. Since in all instances projections were made for the year 1990, all comparisons made here will relate to what the situation might be at that time.

It is important to note several points about the State data used in these comparisons. For one, in all instances, the approaches taken were based on national assumptions and criteria. This does allow for direct comparisons across all States. However, at the same time, it does not take into account any unique approaches or particular considerations in which a State may be interested. Another point is that both the supply and requirements data are dependent on data for the State in a national data base. As indicated in earlier descriptions of the model developments, a number of these national data bases were derived from sample data which would have varying degrees of reliability on a State basis, depending upon the size of the sample and/or the completeness of the data for the particular State.

This national consideration of State data leads to certain anomalies in the data. For example, past trends lead to significant increases in nursing home patient days in Texas by 1990 but to a decline in California. Since as previously indicated the number of nursing personnel required for nursing homes in the criteria-based model has a particular impact on the overall numbers needed, this, in a large measure, is responsible for Texas requiring more registered nurses than California in the criteria-based model results. Presently, there are about twice as many nurses in California as there are in Texas.

With these caveats in mind, however, it is useful to examine the effects of these assumptions on State requirements and supply and how they relate to one another. In comparing the requirements for full-time equivalent registered nurses in each State, according to the historical trend-based model, with the full-time equivalent supply envisioned under the Series A assumptions, the diversity among the States is very evident. On a national basis, when this type of comparison is made, the supply and the requirements in terms of these overall numbers of registered nurses are projected to be equal for 1990; however, on a State-by-State basis, there could be sizeable differences between the supply and requirements in at least half the States. In about 70 percent of these cases, or 20 States, the supply could be greater than the requirements but in the others, the opposite is noted, and the requirements were projected to be far greater than the supply in 1990.

As one might anticipate from the fact that on an overall national basis, the requirements under the criteria-based model assumptions were considerably higher than the projected supply, these same results were also evident for the majority of the States. However, in 11 States and the District of Columbia, the projections of what the full-time equivalent supply might be (Series A) were greater than the requirements. These 11 States included all but Washington in the Pacific area of the country, 3 States in the Mountain area and 4 in the Eastern area.

Chapter 3

RECOMMENDATIONS

Recommendation 1: Supply and Requirements

The role of the Federal Government in support of nurse training must shift to a more targeted approach emphasizing preparation of nurses for practice in designated national priority areas and to improve utilization of nursing personnel. Federal support has been an important instrument in increasing the supply of registered nurses. Despite the fact that there are more registered nurses in practice than ever before, persistent shortages are reported in virtually every practice setting. Factors responsible for the shortage are numerous, complex and interrelated. Solving the problem will require the combined efforts of the Federal Government, States, the health care industry and the profession. Using the resource-building capacity that has been stimulated and supported by the Federal Government, the non-Federal sector must now take responsibility for maintaining enrollments and for subsidizing the costs of any further necessary increases. The Federal Government and health care industry must share responsibility for instituting corrective measures designed to reduce the problems of retention and turnover. These measures are essential in a period of restrained Federal spending and consistent with the Federal responsibility to allocate resources to programs which promote the achievement of national priorities. Accordingly, the Administration's legislative proposal authorizes support through special project grants and contracts for training, education and improved utilization of nursing personnel with special consideration for projects to train or increase the supply of nurses in institutional settings.

Recommendation 2: Special Initiatives

a. Federal initiatives should be continued to improve the geographic distribution of nurses as well as the distribution among the nursing specialties and practice settings. Progress has been made in increasing the number of nurses in inner cities and rural areas. Many such areas, however, lack institutional facilities or community agencies that provide employment opportunities for nurses. Therefore, overcoming problems of geographic maldistribution requires attention of both the Federal and non-Federal sectors to a broad range of factors other than those relating to nursing such as support for area health education centers, remote clinical site training, and reevaluation of present mechanisms for reimbursement of services.

Federal initiatives for improving the distribution of nurses in terms of nursing specialty and practice settings are included in the special project grant, advanced nurse training and nurse practitioner authorities in the Administration's legislative proposal.

b. Federal support to schools of nursing to recruit, retain and graduate disadvantaged students should be continued. Nurses from minority backgrounds are an essential component of the nursing work force. Continued Federal support is essential both to attain the social goal of placing educational opportunities within reach of disadvantaged individuals and to achieve a more balanced representation of minorities in the nursing work force.

Recommendation 3: Advanced Preparation in Nursing

a. Nurse Practitioner Training

Extension of the existing authority for nurse practitioner training is recommended in order to meet the dictates of a redirected national health strategy emphasizing the promotion of health and prevention of disease, thus reducing the need for institutional care. Evidence accumulated over a decade indicates that nurse practitioners are well accepted by patients; they improve access to care, and under some circumstances, reduce the cost of care. Practice in an expanded role encompasses some functions which have traditionally been the prerogative of the physician, but it also includes assessing health states of individuals and families, instructing and counseling in the areas of health promotion and maintenance, assisting patients to comply with medical regimens, and collaborating with health care providers and agencies to coordinate health care services. These functions directly support the achievement of national health goals. Since ultimately the services provided by nurse practitioners will have to be paid for by consumers directly, by third party insurers, or by the public, the costs of providing care will have to be justified by the relevance and effectiveness of the service. For this reason, it is imperative that systematic evaluations be initiated and carried out over a sufficiently long period of time to document patient care outcomes attributable to nursing intervention. Such studies are essential as a basis for formulating future Federal policy for nurse practitioner training.

b. Advanced Nurse Training

The number of nurses with advanced nurse training should be augmented to assure sufficient numbers of expert clinicians, particularly in acute care settings, to direct the learning and clinical practice of students, and to effect changes in the delivery of services both in institutions and community settings.

Findings from research in the basic and behavioral sciences as well as in nursing itself have expanded the scientific base of nursing practice and sharpened its clinical focus. As nursing practice, particularly in acute care settings, has become more complex, the need for nurses who can make expert clinical judgments and act upon them decisively has intesified. It is imperative that the supply of well prepared hospital-based nurses be increased to improve the quality of patient care and to provide models of practice essential for strengthening programs of basic, graduate, and continuing nursing education.

In the nursing home sector, expertise in geriatric nursing is the critical element in maintaining patients at the maximum level of productive functioning. In communities, advanced training in community health nursing is essential for the protection and promotion of the well-being of the populations as a whole. Efforts must therefore be continued in the non-Federal sector to support the preparation of expert nurse clinicians to provide direct patient care, faculty essential for assuring the quality of educational programs, and nursing service administrators who must institute change in management practices that will improve the quality of care and contribute to the retention of nurses in all practice settings.

Appendix 1.

SECTION 951, TITLE IX, PUBLIC LAW 94-63 AND SECTION 12(h), PUBLIC LAW 95-623

PART D—MISCELLANEOUS

INFORMATION RESPECTING THE SUPPLY AND DISTRIBUTION OF AND REQUIREMENTS FOR NURSES

SEC. 951. (a)(1) Using procedures developed in accordance with paragraph (3), the Secretary of Health, Education, and Welfare (hereinafter in this section referred to as the "Secretary") shall determine on a continuing basis—

(A) the supply (both current and projected and within the United States and within each State) of registered nurses, licensed practical and vocational nurses, nurse's aides, registered nurses with advanced training or graduate degrees, and nurse practitioners;

(B) the distribution, within the United States and within each State, of such nurses so as to determine (i) those areas of the United States which are oversupplied or undersupplied, or which have an adequate supply of such nurses in relation to the population of the area, and (ii) the demand for the services which such nurses provide; and

(C) the current and future requirements for such nurses, nationally and within each State.

(2) The Secretary shall survey and gather data, on a continuing basis, on—

(A) the number and distribution of nurses, by type of employment and location of practice;

(B) the number of nurses who are practicing full time and those who are employed part time, within the United States and within each State;

(C) the average rates of compensation for nurses, by type of practice and location of practice;

(D) the activity status of the total number of registered nurses within the United States and within each State;

(E) the number of nurses with advanced training or graduate degrees in nursing, by specialty, including nurse practitioners, nurse clinicians, nurse researchers, nurse educators, and nurse supervisors and administrators; and

(F) the number of registered nurses entering the United States annually from other nations, by country of nurse training and by immigrant status.

(3) Within six months of the date of the enactment of this Act, the Secretary shall develop procedures for determining (on both a current and projected basis) the supply and distribution of and requirements for nurses within the United States and within each State.

(b) Not later than February 1, 1977, and February 1 of each succeeding year, the Secretary shall report to the Congress—

(1) his determinations under subsection (a)(1) and the data gathered under subsection (a)(2);

(2) an analysis of such determination and data; and

(3) recommendations for such legislation as the Secretary determines, based on such determinations and data, will achieve (A) an equitable distribution of nurses within the United States and within each State, and (B) adequate supplies of nurses within the United States and within each State.

(c) The Office of Management and Budget may review the Secretary's report under subsection (b) before its submission to the Congress, but the Office may not revise the report or delay its submission, and it may submit to the Congress its comments (and those of other departments or agencies of the Government) respecting such report.

(approved for such purpose by the Commissioner of Education) that compliance by such school with such requirement will prevent it from maintaining its accreditation.".

HEALTH PROFESSIONS REPORTS AND PROGRAMS

SEC. 12. (a) Section 708(d) of the Public Health Service Act is amended (1) by striking out "not later than September 1 of each year", and (2) by inserting at the end the following: "Such report shall be submitted biennially, and the first such report shall be due not later than October 1, 1979.". 42 USC 292h.

(b) Section 709(b) of such Act is amended by striking out "January 1, 1979" and inserting in lieu thereof "February 1, 1980". 42 USC 292i.

(c) Section 751(i) of such Act is amended by striking out "December" and inserting in lieu thereof "March". 42 USC 294t.

(d) Section 771(b)(2)(B) of such Act is amended by striking out "45 days after the date for which the determination is made" and inserting in lieu thereof "the first December 31 occurring after the date for which the determination is made". 42 USC 295f-1.

(e) Section 782(c) of such Act is amended by striking out "September 30, 1979" and inserting in lieu thereof "March 1, 1980". 42 USC 295g-2.

(f) Section 788(b)(6) of such Act is amended by striking out "September 30, 1978" and inserting in lieu thereof "October 1, 1979". 42 USC 295g-8.

(g) Section 793(c) of such Act is amended (1) by striking out "annually" and inserting in lieu thereof "biennially", and (2) by striking out "December 1, 1978" and inserting in lieu thereof "October 1, 1979". 42 USC 295h-2.

(h) Section 951(b) of the Nurse Training Act of 1975 is amended by striking out "Not later than February 1, 1977, and February 1 of each succeeding year" and inserting in lieu thereof "Not later than October 1, 1979, and October 1 of each odd-numbered year thereafter". 42 USC 296 note.

(i)(1) Section 702(d) of the Health Professions Educational Assistance Act of 1976 is amended by striking out "not later than two years after the date of enactment of this Act" and inserting in lieu thereof "not later than October 1, 1979". 42 USC 295h-4 note.

(2) Section 903(a)(2) of the Health Professions Educational Assistance Act of 1976 is amended by striking out "January 1, 1979" and inserting in lieu thereof "April 1, 1979". 42 USC 292h note.

(j) Section 772(e) of the Public Health Service Act is amended by inserting before the period a comma and the following: "except that a student who, for other than academic reasons, withdraws from a year class before the end of an academic year or does not complete an academic year shall not be considered as having been enrolled in a year class in that academic year". 42 USC 295f-2.

MISCELLANEOUS

SEC. 13. (a)(1) Section 111(h) (42 U.S.C. 7411) of the Act of July 14, 1955, as amended by Public Law 95-95, is amended by adding the following at the end thereof: 42 USC 7401 note.

"(5) Any design, equipment, work practice, or operational standard, or any combination thereof, described in this subsection shall be treated as a standard of performance for purposes of the provisions of this Act (other than the provisions of subsection (a) and this subsection).".

Appendix 2.

TABLES

Table 1 . -- Nurses admitted to the United States, by immigration status, fiscal years 1974-1978

Immigration status	1974	1975	1976	1977	1978
Total nurses admitted	7,910	8,460	8,062	8,539	7,808
Immigrant nurses					
Total	5,331	6,131	6,421	5,825	4,943
Beneficiaries of occupational preference					
Third preference admissions	1,688	1,980	2,004	1,342	731
Adjustments	355	451	715	445	238
Sixth preference admissions	32	59	11	29	45
Adjustments	62	66	33	23	479
Total	2,137	2,556	2,763	1,839	1,493
All others	3,194	3,575	3,658	3,986	3,450
Nonimmigrant nurses[1]					
Total	2,579	2,329	1,641	2,714	2,865
Distinguished merit and ability	2,096	2,084	1,409	2,504	2,744
Exchange visitors	313	213	192	167	105
Trainees 2/	54	16	6	15	8
Other temporary	62	6	32	14	6
Transferees	54	10	2	14	2

1/ Includes visa categories H, J and L.
2/ Includes students of professional nursing.
Source: Annual reports of Immigration and Naturalization Service, Department of Justice.

Table 2 . -- Professional nurses admitted as immigrants,[1] by region and country of last permanent residence, fiscal year, 1974-1978

	1974	1975	1976	1977	1978
All contries	5,331	6,131	6,421	5,825	3,779
Europe	834	916	965	1,108	646
Germany	111	123	128	258	145
Ireland	95	64	50	50	12
United Kingdom	394	480	456	507	312
Other	234	249	331	293	177
Asia	3,457	4,183	4,460	3,264	2,153
Taiwan	125	139	72	154	102
India	827	1,289	1,236	410	79
Korea	988	866	821	713	319
Philippines	997	1,245	1,748	1,529	1,372
Thailand	235	295	230	108	33
Other	285	349	353	350	248
Africa	124	145	155	125	58
Oceania	73	76	82	73	36
North and Central America	715	695	607	1,086	781
Canada	333	309	293	485	399
Jamaica	105	88	87	143	124
Trinidad and Tobago	--	--	50	68	22
Other	277	298	177	390	236
South America	128	116	92	169	105
Guyana	--	--	38	61	36
Other	--	--	54	108	69

1/ Permanent resident aliens.

Source: Annual reprots of Immigration and Naturalization Service, Department of Justice.

Table 13. -- Professional nurses entering United States as nonimmigrant aliens[1] by visa category and by region and country of last permanent residence, fiscal years 1974-1978

	1974			1975			1976			1977			1978		
	H[2]	J[3]	H&J	H[2]	J[3]	H&J	H[2]	J[3]	H&J	H[2]	J[3]	H&J	H[2]	J[3]	H&J
All countries	2,212	313	2,525	2,112	226	2,338	1,448	194	1,642	2,545	194	2,739	2,760	111	2,871
Europe	188	35	223	243	29	272	252	21	273	244	23	267	330	21	351
Ireland	54	4	58	62	2	64	70	--	70	52	2	54	59	5	64
United Kingdom	114	9	123	171	9	180	166	10	176	172	2	174	256	3	259
Other	20	22	42	10	18	28	16	11	27	20	19	39	15	13	28
Asia	1,643	154	1,797	1,650	67	1,717	987	53	1,040	1,091	66	1,157	1,374	24	1,398
India	--	--	--	--	--	--	--	10	10	2	9	11	2	1	3
Japan	--	--	--	--	--	--	--	9	9	7	6	13	3	1	4
Korea	36	4	40	--	--	--	--	1	1	5	8	13	--	1	1
Philippines	1,580	119	1,699	1,633	36	1,669	976	17	993	1,063	8	1,071	1,354	4	1,358
Other	27	31	58	17	31	48	11	16	27	14	35	49	15	17	32
Africa	10	36	46	7	30	37	9	59	68	6	46	52	27	34	61
Oceania	51	3	54	11	4	16	6	2	8	30	1	31	29	29	--
Australia	48	2	50	9	3	12	5	2	7	18	1	19	13	13	--
Other	3	1	4	2	1	4	1	--	1	12	--	12	16	16	--
North and Central America	311	31	342	193	27	220	184	35	219	1,163	47	1,210	997	19	1,016
Canada	233	6	239	107	3	110	131	1	132	1,096	6	1,102	938	6	944
Jamaica	10	1	11	18	2	20	15	--	15	26	7	33	29	7	36
Mexico	1	--	1	23	7	30	4	1	5	4	--	4	1	3	4
Other	67	24	91	45	15	60	34	33	67	37	34	71	29	3	32
South America	9	54	63	8	69	77	10	24	34	11	11	22	3	13	16
Bolivia	--	7	7	--	28	28	--	11	11	--	--	--	--	--	--
Other	9	47	56	8	41	49	10	13	23	11	11	22	3	13	16

1/ Temporary resident aliens.
2/ "H" visas are assigned to persons entering the United States for purposes of employment.
3/ "J" visas are assigned to persons entering the United States on student status as exchange visitors.
Source: Annual reports of Immigration and Naturalization Service, Department of Justice.

Table 4. -- Adjusted 1/ numbers of employed registered nurses per 100,000 population in each State and region, selected years, 1962-1977

State and region	Employed registered nurses							
	1962		1966		1972		1977	
	Adjusted number 1/	RNs per 100,000 pop.	Adjusted number 1/	RNs per 100,000 pop.	Adjusted number 1/	RNs per 100,000 pop.	Adjusted number 1/	RNs per 100,000 pop.
United States	552,894	298	613,188	313	794,979	380	1,028,003	472
New England	50,210	470	57,262	509	72,328	596	88,427	718
Connecticut	11,565	440	15,438	536	17,887	579	20,789	663
Maine	3,658	374	4,051	414	4,810	464	6,263	574
Massachusetts	26,693	514	28,743	532	37,620	649	45,165	776
New Hampshire	3,074	494	3,521	521	4,445	572	6,628	782
Rhode Island	3,488	397	3,673	409	4,712	485	6,188	661
Vermont	1,732	448	1,836	447	2,854	612	3,394	698
Middle Atlantic	132,574	376	145,031	395	183,245	485	209,337	561
New Jersey	22,141	348	24,942	362	31,943	432	35,284	480
New York	67,932	388	74,280	408	89,375	483	101,443	561
Pennsylvania	42,501	373	45,809	395	61,927	519	72,610	612
South Atlantic	69,335	225	78,450	270	108,963	340	151,682	438
Delaware	1,836	393	2,098	409	2,935	514	3,553	602
District of Columbia	4,172	529	3,662	454	5,020	673	6,136	885
Florida	16,809	309	21,760	369	26,202	353	41,120	475
Georgia	7,942	194	6,956	156	12,492	263	18,153	361
Maryland	7,976	247	10,005	277	14,847	363	19,672	471
North Carolina	10,889	231	12,126	244	16,649	318	23,897	429
South Carolina	5,254	215	5,625	217	7,916	295	10,087	348
Virginia	10,016	236	11,511	258	16,647	348	21,648	421
West Virginia	4,461	248	4,707	260	6,255	350	7,416	398
East South Central	20,354	165	22,634	176	30,909	235	43,793	315
Alabama	5,252	158	5,912	168	7,847	223	10,828	291
Kentucky	5,392	175	6,297	198	8,487	256	11,677	333
Mississippi	3,213	142	3,670	157	5,129	226	6,512	273
Tennessee	6,497	178	6,755	175	9,446	233	14,776	344

Table 4 . — Adjusted 1/ numbers of employed registered nurses per 100,000 population in each State and region, selected years, 1962-1977

State and region	Employed registered nurses							
	1962		1966		1972		1977	
	Adjusted number 1/	RNs per 100,000 pop.	Adjusted number 1/	RNs per 100,000 pop.	Adjusted number 1/	RNs per 100,000 pop.	Adjusted number 1/	RNs per 100,000 pop.
West South Central	30,411	171	34,184	182	47,636	237	65,822	302
Arkansas	2,223	126	2,609	133	3,776	190	5,776	267
Louisiana	6,695	199	6,758	187	9,133	245	11,459	291
Oklahoma	4,008	164	4,650	188	6,514	246	8,845	312
Texas	17,485	173	20,167	188	28,213	240	39,742	309
East North Central	105,468	286	188,555	306	152,089	370	199,077	483
Illinois	29,459	292	35,552	330	44,783	397	58,043	515
Indiana	11,632	249	12,829	259	15,841	298	22,909	429
Michigan	21,465	514	23,441	532	30,546	335	41,533	454
Ohio	29,599	295	32,649	315	42,032	389	52,969	485
Wisconsin	13,342	332	14,084	338	18,887	416	23,623	505
West North Central	46,824	301	51,541	323	68,044	406	91,293	536
Iowa	8,926	322	9,981	362	11,959	413	15,499	530
Kansas	6,293	284	6,895	303	9,098	400	11,848	506
Minnesota	13,300	384	14,441	404	19,169	486	26,159	652
Missouri	9,562	222	11,291	247	14,982	312	21,542	449
Nebraska	4,630	320	4,730	329	6,802	443	8,874	562
North Dakota	2,156	341	2,114	329	2,885	455	3,775	577
South Dakota	1,957	271	2,089	308	3,149	462	3,596	512
Mountain	22,776	307	25,738	334	35,322	406	50,111	482
Arizona	4,984	335	5,862	366	8,513	428	13,795	590
Colorado	7,034	372	8,312	425	11,780	491	15,492	583
Idaho	1,935	276	1,954	280	2,518	329	3,516	404
Montana	2,438	350	2,483	354	3,261	451	3,957	510
Nevada	922	263	1,060	246	1,732	323	2,709	422
New Mexico	2,134	214	2,511	250	2,778	258	4,468	368
Utah	2,249	235	2,347	233	3,260	285	4,350	340
Wyoming	1,080	325	1,209	379	1,480	425	1,824	440
Pacific	74,902	329	79,793	323	96,443	352	128,461	436
Alaska	696	288	590	223	1,399	422	1,776	422
California	55,739	327	58,694	312	68,668	334	89,692	408
Hawaii	2,002	289	2,334	321	3,110	380	3,979	440
Oregon	6,297	348	6,814	345	8,790	399	12,793	532
Washington	10,168	338	11,361	374	14,476	420	20,221	547

1/ Adjusted for nonresponse to the question on employment status.

Source: U.S. Department of Health, Education, and Welfare, Division of Nursing. Source Book - Nursing Personnel. DHEW Pub. No. (HRA) 75-43, U.S. Government Printing Office, Washington, D.C., 1974.

U.S. Department of Health and Human Services, Division of Health Professions Analysis. Unpublished data, 1981.

Table 5. -- Status of employed registered nurses in each State and region, 1977

State and region	Total number	Employed in nursing: Total employed		Employed in nursing: Full time		Employed in nursing: Part time		Hours not reported		Not employed in nursing		Employment status not reported	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States, number	1,375,208	958,308	...	667,709	...	286,515	...	4,084	...	323,483	...	93,417	...
percent	100.0		69.7		48.6		20.8		0.3		23.5		6.8
New England	120,679	80,815	67.0	49,575	41.1	30,806	25.5	434	0.4	28,984	24.0	10,880	9.0
Connecticut	27,851	16,712	61.0	9,824	35.3	6,874	24.7	14	1/	5,253	18.9	5,886	
Maine	8,966	5,922	66.1	3,824	42.7	2,088	23.3	10	0.1	2,565	28.6	479	5.3
Massachusetts	61,664	42,463	68.8	26,114	42.2	16,002	26.0	347	0.6	15,411	25.0	3,790	6.2
New Hampshire	9,457	6,445	68.2	4,093	43.3	2,332	24.7	20	0.2	2,727	28.8	285	3.0
Rhode Island	7,991	5,986	74.9	3,618	45.3	2,336	29.2	32	0.4	1,729	21.6	276	3.5
Vermont	4,750	3,287	69.2	2,102	44.3	1,174	24.7	11	0.2	1,299	27.3	164	3.5
Middle Atlantic	289,331	195,866	67.7	137,614	47.6	57,939	20.0	313	0.1	76,671	26.5	16,794	5.8
New Jersey	49,969	31,418	62.9	20,578	41.2	10,734	21.5	106	0.2	13,533	27.1	5,018	10.0
New York	132,209	98,667	74.6	72,385	54.7	26,082	19.7	200	0.2	29,940	22.7	3,602	2.7
Pensylvania	107,153	65,781	61.4	44,651	41.7	21,123	19.7	7	1/	33,198	31.0	8,174	7.6
South Atlantic	201,470	143,804	71.4	110,312	54.8	33,287	16.5	205	0.1	46,221	22.9	11,445	5.7
Delaware	4,993	3,454	69.2	2,331	46.7	1,112	22.3	11	0.2	1,408	28.2	131	2.6
District of Columbia	6,613	5,625	85.0	4,646	70.2	968	14.6	11	0.2	434	6.6	554	8.4
Florida	55,368	37,517	67.8	29,334	53.0	8,148	14.7	35	0.1	12,398	22.4	5,453	9.8
Georgia	23,628	16,674	70.6	13,390	56.7	3,249	13.7	35	0.2	5,157	21.8	1,797	7.6
Maryland	28,117	18,246	64.9	12,295	43.7	5,892	21.0	59	0.2	7,727	27.5	2,144	7.6
North Carolina	30,125	23,718	78.7	19,228	63.8	4,481	14.9	9	1/	5,949	19.8	458	0.5
South Carolina	12,982	9,967	76.8	8,021	61.8	1,944	15.0	2	1/	2,832	21.8	183	1.4
Virginia	30,204	21,239	70.3	15,370	50.9	5,859	19.4	10	1/	8,307	27.5	658	2.2
West Virginia	9,440	7,364	78.0	5,697	60.4	1,634	17.3	33	0.3	2,009	21.3	67	0.7
East South Central	55,767	42,082	75.4	34,249	61.4	7,769	13.9	64	0.1	11,366	20.4	2,319	4.2
Alabama	13,372	10,599	79.3	8,748	65.4	1,827	13.7	24	0.2	2,500	18.7	273	2.0
Kentucky	15,583	11,020	70.7	8,545	54.8	2,454	15.7	21	0.1	3,682	23.7	881	5.7
Mississippi	8,243	6,474	78.5	5,454	66.7	1,013	12.3	7	1/	1,701	20.7	68	0.8
Tennessee	18,569	13,989	75.3	11,502	61.9	2,475	13.3	12	0.1	3,483	18.8	1,097	5.9

Table 5. -- Status of employed registered nurses in each State and region, 1977 -- Continued

State and region	Total number	Employed in nursing						Hours not reported		Not employed in nursing		Employment status not reported	
		Total employed		Full time		Part time							
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
West South Central	89,049	63,957	71.8	51,621	58.0	12,148	13.6	188	0.2	21,768	24.5	3,324	3.7
Arkansas	8,253	5,714	69.2	4,702	56.9	1,011	12.3	1	1/	1,928	23.4	611	7.4
Louisiana	14,298	11,234	78.5	9,034	63.2	2,181	15.2	19	0.1	2,782	19.5	282	2.0
Oklahoma	11,949	8,107	67.9	6,337	53.1	1,757	14.7	13	0.1	2,587	21.6	1,255	10.5
Texas	54,549	38,902	71.3	31,548	57.8	7,199	13.2	155	0.3	14,471	26.5	1,176	2.2
East North Central	257,198	185,140	72.0	120,734	46.9	63,482	24.7	924	0.4	54,925	21.4	17,133	6.6
Illinois	74,262	49,626	66.8	33,908	45.7	15,449	20.8	269	0.3	14,422	19.4	10,214	13.8
Indiana	28,069	20,891	74.4	13,855	49.3	6,877	24.5	159	0.6	4,682	6.3	2,496	8.9
Michigan	56,888	40,035	70.4	26,137	45.9	13,606	24.0	292	0.5	15,025	20.2	1,828	3.2
Ohio	69,620	51,127	73.5	33,320	47.9	17,705	25.4	102	0.2	16,104	21.7	2,389	3.4
Wisconsin	28,359	23,461	82.8	13,514	47.6	9,845	34.8	102	0.4	4,692	6.3	206	0.7
West North Central	115,629	83,510	72.2	52,205	45.1	30,493	26.4	812	0.7	22,127	19.2	9,992	8.6
Iowa	20,171	15,083	74.7	9,318	46.2	5,740	28.4	25	0.1	4,402	21.8	686	3.4
Kansas	16,143	10,721	66.4	5,895	36.5	4,203	26.0	623	3.9	3,878	24.0	1,544	9.6
Minnesota	31,299	22,087	70.6	12,674	40.5	9,321	29.8	92	0.3	4,670	14.9	4,542	14.5
Missouri	26,662	19,844	74.4	14,474	54.3	5,354	20.0	16	0.1	4,179	15.7	2,639	9.9
Nebraska	12,002	8,601	71.6	5,304	44.2	3,270	27.2	27	0.2	3,068	25.6	333	2.8
North Dakota	4,735	3,670	77.5	2,282	48.2	1,373	29.0	15	0.3	935	19.8	130	2.1
South Dakota	4,617	3,504	75.9	2,258	48.9	1,232	26.7	14	0.3	995	21.5	118	2.6
Mountain	68,765	48,267	70.2	33,598	48.8	14,276	20.8	393	0.6	17,915	26.1	2,583	3.7
Arizona	19,139	12,825	67.0	9,672	50.5	3,136	16.4	17	0.1	4,978	26.0	1,335	7.0
Colorado	20,801	15,138	72.8	10,215	49.1	4,908	23.6	15	0.1	5,200	25.0	463	2.2
Idaho	4,962	3,463	69.1	2,209	44.5	1,188	23.9	66	1.3	1,432	28.9	67	1.4
Montana	5,326	3,869	72.6	2,345	44.1	1,517	28.5	7	1/	1,336	25.1	121	2.3
Nevada	3,586	2,615	72.9	2,039	56.9	567	15.8	9	0.2	851	23.7	120	3.4
New Mexico	6,281	4,321	68.8	3,215	51.2	1,089	17.3	17	0.3	1,668	26.6	292	4.6
Utah	6,164	4,276	69.4	2,683	43.6	1,332	21.6	261	4.2	1,793	29.1	95	1.5
Wyoming	2,506	1,760	70.2	1,220	48.7	539	21.5	1	1/	657	26.2	89	3.6
Pacific	177,320	114,867	64.8	77,801	43.9	36,315	20.5	751	0.4	43,506	24.5	18,947	10.7
Alaska	2,474	1,670	67.5	1,213	49.0	445	18.0	12	0.5	658	26.6	146	5.9
California	125,308	80,372	64.1	55,982	44.6	24,135	19.3	255	0.2	32,078	25.6	12,858	10.3
Hawaii	5,174	3,190	61.7	2,594	50.2	576	11.1	20	0.4	958	18.5	1,026	19.8
Oregon	15,199	12,538	82.5	7,686	50.6	4,826	31.7	26	0.2	2,359	15.5	302	2.0
Washington	29,165	17,097	58.6	10,326	35.4	6,333	21.7	438	1.5	7,453	25.6	4,615	15.8

1/ Less than 0.1.
Source: American Nurses' Association. 1977 Inventory of Registered Nurses. Kansas City, Missouri, Unpublished data.

Table 6.--Employment status of licensed practical nurses in each State and region, 1974

State and region	Total		Employed in nursing													
			Total employed		Full time		Regular part time		Irregular part time		Full or part time not reported		Not employed in nursing		Employment status not reported	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States	533,459	100.0	377,889	70.9	276,947	51.9	46,158	8.7	42,775	8.0	12,009	2.3	113,689	21.3	41,881	7.8
New England	36,320	100.0	25,284	69.6	16,397	45.1	5,867	16.2	2,681	7.4	339	.9	8,663	23.9	2,373	6.5
Connecticut	7,198	100.0	5,610	78.0	3,633	50.5	1,763	24.5	200	2.8	14	.2	1,263	17.5	325	4.5
Maine	2,589	100.0	1,865	72.1	1,189	45.9	342	13.3	321	12.4	13	.5	669	25.8	55	2.1
Massachusetts	19,387	100.0	12,799	66.0	8,398	43.3	2,672	13.8	1,530	7.9	199	1.0	4,753	24.5	1,835	9.5
New Hampshire	2,211	100.0	1,500	67.8	968	43.8	245	11.1	251	11.3	36	1.6	640	29.0	71	3.2
Rhode Island	2,990	100.0	2,239	74.9	1,359	45.5	601	20.1	228	7.6	51	1.7	694	23.2	57	1.9
Vermont	1,945	100.0	1,271	65.4	850	43.7	244	12.6	151	7.8	26	1.3	644	33.1	30	1.5
Middle Atlantic	102,165	100.0	66,139	64.7	48,136	47.1	10,030	9.8	7,399	7.2	574	.6	26,975	26.4	9,051	8.9
New Jersey	20,789	100.0	9,104	43.8	6,448	31.0	1,596	7.8	1,025	4.9	35	.1	3,725	17.9	7,960	38.3
New York	45,798	100.0	32,817	71.6	23,386	51.0	5,103	11.1	3,926	8.6	402	.9	12,436	27.2	545	1.2
Pennsylvania	35,578	100.0	24,218	68.1	18,302	51.4	3,331	9.4	2,448	6.9	137	.4	10,814	30.4	546	1.5
South Atlantic	73,733	100.0	54,059	73.3	36,219	49.1	3,431	4.6	5,664	7.7	8,747	11.9	14,430	19.6	5,244	7.1
Delaware	1,165	100.0	823	70.7	605	52.0	96	8.2	120	10.3	2	.2	309	26.5	33	2.8
Dist. of Columbia	2,655	100.0	2,297	86.5	1,919	72.3	107	4.0	230	8.7	41	1.5	297	11.2	61	2.3
Florida	17,130	100.0	12,313	71.9	9,225	53.8	889	5.2	2,018	11.8	181	1.1	4,229	24.7	588	3.4
Georgia	13,721	100.0	7,822	57.0	6,610	48.2	467	3.4	696	5.0	49	.4	2,036	14.8	3,863	28.2
Maryland	6,814	100.0	5,098	74.8	3,976	58.3	592	8.7	496	7.3	34	.5	1,514	22.2	202	3.0
North Carolina	11,114	100.0	8,851	79.6	461	4.2	58	.5	116	1.0	8,216	73.9	2,167	19.5	96	.9
South Carolina	5,476	100.0	4,496	82.1	3,610	65.9	343	6.3	415	7.6	128	2.3	803	14.7	177	3.2
Virginia	11,260	100.0	8,928	79.3	7,031	62.4	696	6.2	1,154	10.3	47	.4	2,224	19.7	108	1.0
West Virginia	4,398	100.0	3,431	78.0	2,782	63.2	183	4.2	419	9.5	47	1.1	851	19.4	116	2.6
East South Central	36,704	100.0	27,617	75.2	22,687	61.8	1,809	4.9	2,328	6.3	793	2.2	5,802	15.8	3,285	9.0
Alabama	10,056	100.0	8,217	81.7	6,848	68.1	483	4.8	508	5.0	378	3.8	1,620	16.1	219	2.2
Kentucky	6,624	100.0	5,146	77.7	4,136	62.5	250	3.7	564	8.5	196	3.0	1,365	20.6	113	1.7
Mississippi	5,641	100.0	4,702	83.4	3,796	67.3	360	6.4	433	7.7	113	2.0	892	15.8	47	.8
Tennessee	14,383	100.0	9,552	66.4	7,907	55.0	716	5.0	823	5.7	106	.7	1,925	13.4	2,906	20.2
West South Central	65,939	100.0	49,434	75.0	40,809	62.0	2,113	3.2	6,411	9.7	101	.1	14,116	21.4	2,389	3.6
Arkansas	6,530	100.0	4,959	76.0	4,023	61.6	362	5.6	551	8.4	23	.4	1,492	22.8	79	1.2
Louisiana	9,416	100.0	7,460	79.2	5,635	59.8	453	4.8	1,326	14.1	46	.5	1,778	18.9	178	1.9
Oklahoma	7,080	100.0	5,462	77.2	4,591	64.8	586	8.3	280	4.0	5	.1	1,560	22.0	58	.8
Texas	42,913	100.0	31,553	73.5	26,560	42.9	712	1.6	4,254	9.9	27	.1	9,286	21.7	2,074	4.8

Table 6.--Employment status of licensed practical nurses in each State and region, 1974--Continued

State and region	Total		Employed in nursing										Not employed in nursing		Employment status not reported	
			Total employed		Full time		Regular part time		Irregular part time		Full or part time not reported					
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
East North Central	91,312	100.0	70,371	77.0	50,149	54.9	12,133	13.3	7,685	8.4	404	.4	17,957	19.7	2,984	3.3
Illinois	18,564	100.0	15,173	81.7	11,259	60.6	1,439	7.8	2,264	12.2	211	1.1	3,082	16.6	309	1.7
Indiana	8.051	100.0	6,200	77.0	4,515	56.1	542	6.8	1,117	13.8	26	.3	1,372	7.1	479	5.9
Michigan	25,419	100.0	17,479	68.8	12,170	47.9	3,180	12.5	2,119	8.3	10	.1	6,528	25.7	1,412	5.5
Ohio	29,956	100.0	23,585	78.7	17,238	57.5	5,059	16.9	1,138	3.8	150	.5	5,624	18.8	747	2.5
Wisconsin	9,322	100.0	7,934	85.1	4,967	53.3	1,913	20.5	1,047	11.2	7	.1	1,351	14.5	37	.4
West North Central	40,600	100.0	32,154	79.2	22,349	55.1	5,253	12.9	3,879	9.5	673	1.7	7,069	17.4	1,377	3.4
Iowa	7,100	100.0	5,571	78.5	3,836	54.0	1,184	16.7	527	7.4	24	.4	1,485	20.9	44	.6
Kansas	4,170	100.0	3,140	75.3	2,469	59.2	254	6.1	292	7.0	125	3.0	888	21.3	142	3.4
Minnesota	11,477	100.0	9,092	79.2	5,504	48.0	2,027	17.6	1,503	13.1	58	.5	1,820	15.9	565	4.9
Missouri	10,809	100.0	8,973	83.0	6,629	61.3	951	8.8	960	8.9	433	4.0	1,324	12.3	512	4.7
Nebraska	3,800	100.0	2,805	73.8	2,085	54.9	480	12.6	220	5.8	20	.5	904	23.8	91	2.4
North Dakota	1,741	100.0	1,392	80.0	974	55.9	167	9.6	243	14.0	8	.5	336	19.3	13	.7
South Dakota	1,503	100.0	1,181	78.6	852	56.7	190	12.7	134	8.9	5	.3	312	20.8	10	.6
Mountain	22,165	100.0	15,773	71.1	11,846	53.4	1,581	7.1	2,234	10.1	112	.5	5,437	24.5	955	4.3
Arizona	4,323	100.0	3,097	71.6	2,352	54.4	234	5.4	474	10.9	37	.9	963	22.3	263	6.1
Colorado	5,876	100.0	4,448	75.7	3,262	55.5	486	8.3	660	11.2	40	.7	1,298	22.1	130	2.2
Idaho	2,812	100.0	1,982	70.5	1,470	52.3	246	8.7	264	9.4	2	.1	808	28.7	22	.8
Montana	1,907	100.0	1,412	74.0	1,097	57.5	184	9.6	126	6.6	5	.3	474	24.9	21	1.1
Nevada	1,397	100.0	976	69.9	807	57.8	90	6.4	72	5.2	7	.5	372	26.6	49	3.5
New Mexico	2,519	100.0	1,736	68.9	1,365	54.2	21	.8	347	13.8	3	.1	691	27.4	92	3.7
Utah	2,683	100.0	1,636	61.0	1,128	42.1	261	9.7	230	8.6	17	.6	676	25.2	371	13.8
Wyoming	648	100.0	486	75.0	365	56.3	59	9.1	61	9.4	1	.2	155	23.9	7	1.1
Pacific	64,521	100.0	37,058	57.5	28,355	44.0	3,941	6.1	4,494	7.0	268	.4	13,240	20.5	14,223	22.0
Alaska	624	100.0	391	62.7	301	48.3	25	4.0	63	10.1	2	.3	213	34.1	20	3.2
California	47,725	100.0	25,976	54.4	20,052	42.0	2,966	6.2	2,782	5.8	176	.4	8,335	17.6	13,414	28.1
Hawaii	2,189	100.0	1,365	62.3	1,228	56.1	60	2.7	63	2.9	14	.6	382	17.5	442	20.2
Oregon	4,174	100.0	3,041	72.9	2,209	52.9	42	1.0	770	18.5	20	.5	1,033	24.7	100	2.4
Washington	9,809	100.0	6,285	64.1	4,565	46.5	848	8.7	816	8.3	56	.6	3,277	33.4	247	2.5

Source: Roth, Aleda V. and Schmittling, Gordon T. LPNs: 1974 Inventory of Licensed Practical Nurses. Kansas City, American Nurses' Association, 1977.

Table 7.--Field of employment of employed licensed practical nurses in each State and region, 1974

State and region	Total	Field of employment															
		Hospital		Nursing home		Private duty		Public health		Industry		Physician's or Dentist's office		Other		Not reported	
	Number	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States	377,889	238,467		65,351		28,210		5,863		2,320		24,497		10,708		2,473	
Number	100.0		63.1		17.3		7.5		1.5		0.6		6.5		2.8		0.7
Percent																	
New England	25,284	15,235	60.3	6,283	24.8	1,594	6.3	377	1.5	110	0.4	953	3.8	618	2.4	114	0.5
Connecticut	5,610	3,184	56.7	1,520	27.1	374	6.7	112	2.0	26	0.5	345	6.1	29	0.5	20	0.4
Maine	1,865	1,227	65.8	359	19.3	122	6.5	12	0.6	8	0.4	85	4.6	50	2.7	2	0.1
Massachusetts	12,799	7,577	59.2	3,381	26.4	772	6.0	189	1.5	56	0.4	340	2.7	418	3.3	66	0.5
New Hampshire	1,500	916	61.1	356	23.7	104	6.9	15	1.0	3	0.2	76	5.1	24	1.6	6	0.4
Rhode Island	2,239	1,590	71.0	332	14.8	149	6.7	37	1.6	13	0.6	56	2.5	55	2.5	7	0.3
Vermont	1,271	741	58.3	335	26.4	73	5.7	12	1.0	4	0.3	51	4.0	42	3.3	13	1.0
Middle Atlantic	66,139	39,725	60.1	11,986	18.1	8,354	12.6	1,023	1.6	286	0.4	2,533	3.8	2,035	3.1	197	0.3
New Jersey	9,104	5,921	65.0	1,174	12.9	958	10.5	110	1.2	45	0.5	476	5.2	380	4.0	40	0.5
New York	32,817	19,464	59.3	6,481	19.7	4,142	12.6	579	1.8	133	0.4	1,057	3.2	905	2.8	56	0.2
Pennsylvania	24,218	14,340	59.2	4,331	17.9	3,254	13.4	334	1.4	108	0.5	1,000	4.1	750	3.1	101	0.4
South Atlantic	54,059	35,328	65.4	6,612	12.2	4,993	9.2	897	1.7	364	0.7	4,339	8.0	1,097	2.0	429	0.8
Delaware	823	532	64.6	85	10.3	102	12.4	20	2.4	5	0.6	50	6.1	22	2.7	7	0.9
District of Col.	2,297	1,624	70.7	128	5.6	296	12.9	95	4.1	13	0.6	57	2.5	72	3.1	12	0.5
Florida	12,313	7,101	57.7	1,862	15.1	1,546	12.6	140	1.1	33	0.3	1,176	9.5	165	1.3	290	2.4
Georgia	7,822	4,836	61.8	1,348	17.2	459	5.9	182	2.3	92	1.2	662	8.5	223	2.8	20	0.3
Maryland	5,098	3,410	66.9	727	14.2	468	9.2	86	1.7	32	0.6	243	4.8	116	2.3	16	0.3
North Carolina	8,851	6,244	70.6	816	9.2	665	7.5	76	.9	88	1.0	799	9.0	154	1.7	9	0.1
South Carolina	4,496	2,999	66.7	525	11.7	335	7.4	126	2.8	44	1.0	354	7.9	93	2.1	20	0.4
Virginia	8,928	6,035	67.6	905	10.1	832	9.3	124	1.4	44	0.5	777	8.7	195	2.2	16	0.2
West Virginia	3,431	2,547	74.2	216	6.3	290	8.5	48	1.4	13	0.4	221	6.4	57	1.7	39	0.1
East South Central	27,617	18,699	67.7	3,314	12.0	1,816	6.6	345	1.2	334	1.2	2,239	8.1	595	2.2	275	1.0
Alabama	8,217	5,512	67.1	1,264	15.4	484	5.9	45	.5	76	0.9	643	7.8	95	1.2	98	1.2
Kentucky	5,146	3,468	67.4	584	11.3	359	7.0	81	1.6	67	1.3	420	8.2	146	2.8	21	0.4
Mississippi	4,702	3,158	67.1	562	11.9	309	6.6	65	1.4	38	0.8	366	7.8	201	4.3	3	0.1
Tennessee	9,552	6,561	68.7	904	9.5	664	6.9	154	1.6	153	1.6	810	8.5	153	1.6	153	1.6
West South Central	49,434	30,220	61.1	9,018	18.2	2,946	6.0	937	1.9	279	0.6	4,508	9.1	1,208	2.5	318	0.6
Arkansas	4,959	3,223	65.0	621	12.5	318	6.4	71	1.5	69	1.4	542	10.9	104	2.1	11	0.2
Louisiana	7,460	4,460	59.8	1,240	16.6	786	10.5	171	2.3	47	0.6	596	8.0	148	2.0	12	0.2
Oklahoma	5,462	3,484	63.8	1,178	21.6	212	3.9	92	1.7	30	0.5	354	6.5	110	2.0	2	(1)
Texas	31,553	19,053	60.4	5,979	18.9	1,630	5.0	603	1.9	133	0.4	3,016	9.6	846	2.7	295	0.9

Table 7.--Field of employment of employed licensed practical nurses in each State and region, 1974--Continued

State and region	Total Number	Hospital Number	Hospital Percent	Nursing home Number	Nursing home Percent	Private duty Number	Private duty Percent	Public health Number	Public health Percent	Industry Number	Industry Percent	Physician's or Dentist's office Number	Physician's or Dentist's office Percent	Other Number	Other Percent	Not reported Number	Not reported Percent
East North Central	70,371	45,230	64.3	13,298	18.9	4,196	6.0	945	1.3	525	0.8	3,302	4.7	2,282	3.2	593	0.8
Illinois	15,173	9,058	59.7	2,841	18.7	1,480	9.7	312	2.1	182	1.2	846	5.6	381	2.5	73	0.5
Indiana	6,200	3,795	61.2	1,248	20.1	366	5.9	84	1.4	73	1.2	496	8.0	120	1.9	18	0.3
Michigan	17,479	12,452	71.2	2,543	14.5	511	2.9	254	1.5	124	0.7	1,382	7.9	98	0.6	115	0.7
Ohio	23,585	15,104	64.0	4,572	19.4	1,694	7.2	240	1.0	55	0.2	180	0.8	1,361	5.8	379	1.6
Wisconsin	7,934	4,821	60.8	2,094	26.4	145	1.8	55	0.7	91	1.1	398	5.0	322	4.1	8	0.1
West North Central	32,154	20,422	63.5	6,416	19.9	1,376	4.3	444	1.4	162	0.5	2,368	7.4	664	2.1	302	0.9
Iowa	5,571	3,314	59.5	1,416	25.4	135	2.4	42	0.8	25	0.4	424	7.6	189	3.4	26	0.5
Kansas	3,140	2,120	67.5	522	16.6	141	4.5	46	1.5	9	0.3	206	6.6	66	2.1	30	0.9
Minnesota	9,092	5,722	63.0	2,067	22.7	228	2.5	89	1.0	20	0.2	783	8.6	155	1.7	28	0.3
Missouri	8,973	5,753	64.1	1,294	14.4	755	8.4	186	2.1	92	1.0	538	6.0	169	1.9	186	2.1
Nebraska	2,805	1,789	63.8	606	21.6	81	2.9	32	1.1	14	0.5	211	7.5	52	1.9	20	0.7
North Dakota	1,392	969	69.6	258	18.5	19	1.4	14	1.0	1	0.1	103	7.4	19	1.4	9	0.6
South Dakota	1,181	755	63.9	253	21.4	17	1.4	35	3.0	1	0.1	103	8.7	14	1.2	3	0.3
Mountain	15,773	10,045	63.7	2,493	15.8	991	6.8	361	2.3	49	0.3	1,282	8.1	478	3.0	74	0.5
Arizona	3,097	1,928	62.3	264	8.5	340	11.0	148	1.8	10	0.3	222	4.2	153	4.9	32	1.0
Colorado	4,448	2,437	54.8	1,090	24.5	328	7.4	56	1.3	13	0.3	367	8.2	137	3.1	20	.4
Idaho	1,982	1,394	70.3	285	14.4	47	2.4	31	1.5	7	0.4	177	8.9	34	1.7	7	0.4
[illegible]	1,412	956	67.7	289	20.5	46	3.3	23	1.6	2	0.1	72	5.1	19	1.3	5	0.4
Nevada	976	710	72.7	87	8.9	60	6.2	11	1.1	1	0.1	85	8.7	19	2.0	3	0.3
New Mexico	1,736	1,159	66.8	145	8.3	104	6.0	74	4.3	3	0.2	178	10.2	70	4.0	3	0.2
Utah	1,636	1,149	70.2	225	13.8	49	3.0	15	0.9	7	0.4	151	9.2	36	2.2	4	0.3
Wyoming	486	312	64.2	108	22.2	17	3.5	3	0.6	6	1.2	30	6.2	10	2.1	0	0.0
Pacific	37,058	23,563	63.6	5,931	16.0	1,944	5.2	534	1.4	211	0.6	2,973	8.0	1,731	4.7	171	0.5
Alaska	391	272	69.6	36	9.2	8	2.0	23	5.9	3	0.8	20	5.1	26	6.6	3	0.8
California	25,976	16,448	63.3	4,039	15.6	1,525	5.9	320	1.2	153	0.6	2,058	7.9	1,326	5.1	107	0.4
Hawaii	1,365	863	63.2	73	5.4	51	3.7	43	3.2	7	0.5	206	15.1	112	8.2	10	0.7
Oregon	3,041	1,997	65.7	498	16.4	89	2.9	71	2.3	20	0.7	293	9.6	63	2.1	10	0.3
Washington	6,285	3,983	63.4	1,285	20.4	271	4.3	77	1.2	28	0.4	396	6.3	204	3.3	41	0.7

Source: Roth, Aleda V. and Schmittling, Gordon T. LPNs: 1974 Inventory of Licensed Practical Nurses. Kansas City, American Nurses' Association, 1977.

Table 8. — Employed registered nurses by field of employment in each State and region, 1977

State and region	Total number	Hospital		Nursing home		Nursing education		Private duty		School nurse		Occupational health		Office nurse		Public health		Self-employed		Other specified field		Field not reported	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States, number	958,308	622,804	...	72,692	...	32,199	...	26,410	...	33,530	...	20,736	...	59,553	...	52,864	...	3,672	...	21,112	...	12,736	...
Percent	100.0	...	65.0	...	7.6	...	3.4	...	2.7	...	3.5	...	2.2	...	6.2	...	5.5	...	0.4	...	2.2	...	1.3
New England	80,815	48,409	60.0	9,504	11.8	2,456	3.0	3,297	4.1	3,733	4.6	1,369	1.7	3,349	4.1	4,432	5.5	276	0.3	2,489	3.1	1,501	1.8
Connecticut	16,712	8,521	51.0	2,696	16.1	413	2.5	809	4.8	952	5.7	431	2.6	942	5.6	985	5.9	107	0.6	394	2.4	462	2.8
Maine	5,922	3,691	62.3	565	9.6	185	3.1	201	3.4	218	3.6	119	2.0	290	4.9	452	7.7	10	0.2	26	0.4	165	2.8
Massachusetts	42,463	26,861	63.1	4,324	10.2	1,373	3.2	1,759	4.1	1,708	4.0	603	1.4	1,324	3.1	1,894	4.5	112	0.3	1,797	4.2	728	1.7
New Hampshire	6,445	3,638	56.4	829	12.9	218	3.4	234	3.6	390	6.1	76	1.2	412	6.4	428	6.6	25	0.4	129	2.0	66	1.0
Rhode Island	5,986	3,954	66.0	647	10.8	188	3.1	219	3.7	251	4.2	93	1.6	162	2.7	352	5.9	8	0.1	49	0.8	63	1.1
Vermont	3,287	1,764	53.6	443	13.5	79	2.4	75	2.3	214	6.5	47	1.4	219	6.7	321	9.9	14	0.4	94	2.8	17	0.5
Middle Atlantic	195,866	120,715	61.6	17,166	8.8	6,118	3.1	9,923	5.1	10,156	5.2	4,429	2.3	10,148	5.2	10,086	5.2	734	0.4	3,879	2.0	2,512	1.3
New Jersey	31,418	18,477	58.8	2,732	8.7	961	3.1	1,402	4.5	2,516	8.0	773	2.5	2,133	6.8	1,544	4.9	105	0.3	539	1.7	236	0.7
New York	98,667	62,174	63.0	8,061	8.2	2,918	3.0	5,771	5.8	4,652	4.7	2,034	2.1	3,967	4.0	5,016	5.1	376	0.4	2,274	2.3	1,424	1.4
Pennsylvania	65,781	40,064	60.9	6,373	9.7	2,239	3.4	2,750	4.2	2,988	4.5	1,622	2.5	4,048	6.2	3,526	5.4	253	0.4	1,066	1.6	852	1.2
South Atlantic	143,804	95,159	66.2	7,383	5.1	4,772	3.3	4,135	2.9	2,936	2.0	3,244	2.3	9,559	6.6	9,912	6.9	674	0.5	3,718	2.6	2,312	1.6
Delaware	3,454	2,042	59.1	209	6.1	164	4.7	142	4.1	248	7.2	102	3.0	281	8.1	146	4.2	9	0.3	83	2.4	28	0.8
Dist. of Columbia	5,625	3,971	70.6	101	1.8	237	4.3	154	2.7	84	1.5	304	5.4	170	3.0	308	5.5	18	0.3	239	4.2	39	0.7
Florida	37,517	25,187	67.1	2,068	5.5	888	2.4	1,649	4.4	305	0.8	539	1.4	2,564	6.8	3,021	8.1	133	0.4	914	2.4	249	0.7
Georgia	16,676	11,146	66.9	821	4.9	597	3.6	471	2.8	216	1.3	402	2.4	1,040	6.2	1,339	8.0	54	0.3	424	2.6	164	1.0
Maryland	18,246	11,866	65.1	1,210	6.6	553	3.0	573	3.1	567	3.1	364	2.0	988	5.4	1,348	7.4	83	0.5	573	3.1	121	0.7
North Carolina	23,718	15,847	66.8	1,135	4.8	799	3.4	204	0.9	412	1.7	530	2.2	1,797	7.6	845	3.6	289	1.2	569	2.4	1,291	5.4
South Carolina	9,967	5,972	59.9	520	5.2	394	3.9	255	2.6	283	2.8	345	3.5	820	8.2	1,124	11.3	15	0.2	179	1.8	60	0.6
Virginia	21,239	13,984	65.9	1,102	5.2	848	4.0	554	2.6	667	3.2	451	2.1	1,516	7.1	1,387	6.5	67	0.3	495	2.3	168	0.8
West Virginia	7,364	5,144	69.8	217	2.9	292	4.0	133	1.8	154	2.1	207	2.8	383	5.2	394	5.4	6	0.1	242	3.3	192	2.6
East South Central	42,082	29,347	69.7	2,004	4.7	1,894	4.5	746	1.8	626	1.7	1,130	2.7	2,022	4.8	3,089	7.3	99	0.2	861	2.0	264	0.6
Alabama	10,599	7,304	68.9	559	5.7	534	5.0	169	1.7	141	1.3	298	2.8	550	5.1	810	7.6	24	0.2	162	1.6	48	0.5
Kentucky	11,020	7,689	69.8	622	5.6	467	4.2	153	1.4	135	1.2	242	2.2	516	4.7	837	7.6	23	0.2	250	2.3	86	0.7
Mississippi	6,474	4,285	66.2	309	4.8	364	5.6	152	2.3	137	2.1	103	1.6	364	5.6	524	8.1	11	0.2	214	3.3	11	0.2
Tennessee	13,989	10,069	72.0	514	3.8	529	3.8	272	1.9	213	1.5	487	3.5	592	4.2	918	6.5	41	0.3	235	1.7	119	0.8

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Table 8 . — Employed registered nurses by field of employment in each State and region, 1977 -- Continued

State and region	Total number	Hospital		Nursing home		Nursing education		Private duty		School nurse		Occupational health		Office nurse		Public health		Self-employed		Other Specified field		Field not reported	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
West South Central	63,957	43,281	67.7	2,898	4.5	2,829	4.4	1,424	2.2	2,678	4.2	1,238	1.9	3,868	6.1	3,765	5.9	207	0.3	1,321	2.1	671	1.1
Arkansas	5,714	3,869	67.7	430	7.5	283	5.0	41	0.7	136	2.4	106	1.8	358	6.3	399	7.0	12	0.2	46	0.8	37	0.6
Louisiana	11,234	7,639	68.0	508	4.5	540	4.8	335	3.0	195	1.7	234	2.1	634	5.7	870	7.7	53	0.5	161	1.4	65	0.6
Oklahoma	8,107	5,680	70.1	396	4.9	363	4.5	130	1.6	266	3.0	119	1.5	482	5.9	428	5.3	25	0.3	181	2.2	57	0.7
Texas	38,902	26,093	67.1	1,564	4.0	1,643	4.2	918	2.4	2,081	5.3	779	2.0	2,394	6.2	2,068	5.3	117	0.3	933	2.4	312	0.8
East North Central	185,140	122,879	66.4	15,485	8.4	6,684	3.6	3,191	1.7	4,712	2.5	5,526	3.0	13,209	7.1	8,809	4.8	549	0.3	2,662	1.4	1,453	0.8
Illinois	49,626	32,965	66.4	3,710	7.5	1,663	3.3	886	1.7	1,663	3.4	1,331	2.7	3,762	7.6	1,978	4.0	172	0.3	1,143	2.3	391	0.8
Indiana	20,891	12,736	61.0	1,815	8.7	794	3.8	470	2.2	725	3.5	714	3.4	2,116	10.1	772	3.7	106	0.5	350	1.7	293	1.4
Michigan	40,035	27,677	69.1	2,685	6.7	1,519	3.8	571	1.4	580	1.5	1,306	3.3	2,536	6.3	2,246	5.6	126	0.3	327	0.8	462	1.2
Ohio	51,127	34,510	67.5	3,787	7.4	1,792	3.5	1,077	2.1	1,366	2.7	1,633	3.2	3,512	6.8	2,392	4.7	97	0.2	726	1.4	236	0.5
Wisconsin	23,461	15,011	66.0	3,488	14.9	916	3.9	187	0.8	378	1.6	562	2.3	1,283	5.5	1,421	6.0	48	0.2	116	0.5	71	0.3
West North Central	83,510	56,970	67.0	7,312	8.8	3,137	3.8	926	1.1	2,787	3.3	1,233	1.5	5,018	6.0	3,492	4.2	210	0.3	1,394	1.6	2,031	2.4
Iowa	15,083	9,577	63.5	1,510	10.0	632	4.2	161	1.1	636	4.2	276	1.8	1,182	7.8	505	3.4	37	0.2	481	3.2	86	0.6
Kansas	10,721	7,329	68.4	674	6.3	380	3.5	92	0.9	369	3.4	135	1.3	872	8.1	468	4.4	27	0.2	215	2.0	160	1.5
Minnesota	22,087	14,491	65.6	2,442	11.1	653	3.0	244	1.1	632	2.9	292	1.3	849	3.8	861	3.9	49	0.2	107	0.5	1,467	6.6
Missouri	19,846	14,128	71.2	1,105	5.6	723	3.7	213	1.1	723	3.6	392	2.0	1,018	5.1	1,021	5.1	47	0.2	283	1.4	191	1.1
Nebraska	8,601	5,808	67.5	720	8.3	414	4.8	170	2.0	293	3.4	103	1.2	535	6.2	326	3.8	34	0.4	169	2.0	31	0.4
North Dakota	3,670	2,446	66.6	412	11.2	175	4.8	31	0.8	42	1.1	25	0.7	265	7.2	147	4.0	9	0.3	76	2.1	42	1.2
South Dakota	3,504	2,191	62.5	449	12.8	160	4.6	15	0.4	96	2.7	12	0.3	297	8.5	162	4.6	7	0.2	63	1.8	54	1.6
Mountain	48,267	31,328	64.9	3,210	6.7	1,350	2.8	772	1.6	1,980	4.1	645	1.4	3,494	7.2	2,478	5.1	287	0.6	1,852	3.8	871	1.8
Arizona	12,825	8,492	66.2	625	4.9	337	2.6	305	2.4	758	5.9	160	1.2	817	6.4	576	4.5	55	0.4	576	4.5	124	1.0
Colorado	15,138	9,637	63.7	1,295	8.5	331	2.2	199	1.3	544	3.6	237	1.6	929	6.1	692	4.6	66	0.4	753	5.0	455	3.0
Idaho	3,463	2,188	63.2	311	9.0	111	3.2	25	0.7	79	2.3	42	1.2	337	9.7	206	5.9	18	0.5	89	2.6	57	1.7
Montana	3,869	2,366	61.1	402	10.4	123	3.2	63	1.6	96	2.5	43	1.1	409	10.6	177	4.6	18	0.5	138	3.5	34	0.9
Nevada	2,615	1,761	67.4	160	6.1	58	2.2	47	1.8	82	3.1	31	1.2	217	8.3	175	6.7	14	0.5	48	1.8	22	0.9
New Mexico	4,321	2,720	62.9	114	2.6	156	3.6	87	2.0	254	5.9	59	1.4	348	8.1	306	7.1	103	2.4	136	3.1	40	0.9
Utah	4,276	3.069	71.8	175	4.1	190	4.4	37	0.9	76	1.8	60	1.4	255	6.0	243	5.7	10	0.2	74	1.7	87	2.0
Wyoming	1,760	1,095	62.2	128	7.3	46	2.6	9	0.5	91	5.2	13	0.7	182	10.3	103	5.9	3	0.2	38	2.2	52	2.9
Pacific	114,867	75,716	65.9	7,730	6.7	2,959	2.6	2,014	1.8	3,942	3.4	1,917	1.7	8,889	7.7	6,801	5.9	636	0.6	2,941	2.6	1,322	1.1
Alaska	1,670	968	58.0	77	4.6	38	2.3	8	0.5	101	6.0	16	1.0	215	12.8	154	9.2	10	0.6	50	3.0	33	2.0
California	80,372	54,398	67.6	4,563	5.7	1,999	2.5	1,562	1.9	2,975	3.7	1,487	1.9	5,271	6.6	4,735	5.9	465	1.6	2,033	5.9	884	2.5
Hawaii	3,190	2,031	63.7	136	4.2	76	2.3	60	1.9	69	2.2	38	1.2	373	11.7	255	8.0	16	0.5	112	3.5	26	0.8
Oregon	12,538	8,037	64.1	1,082	8.6	328	2.6	182	1.5	352	2.8	149	1.2	1,218	9.7	730	5.8	56	0.5	215	1.7	189	1.5
Washington	17,097	10,282	60.2	1,872	11.0	520	3.0	202	1.2	445	2.6	227	1.3	1,812	10.6	927	5.4	89	0.5	531	3.1	190	1.1

Source: American Nurses' Association, 1977 Inventory of Registered Nurses. Kansas City. Unpublished data.

Table 9. — Employed registered nurses by type of position in each State and region, 1977

State and region	Total number	Administrator		Consultant		Supervisor or assistant		Instructor		Head nurse or assistant		Staff or general duty nurse		Nurse practitioner		Clinical specialist		Other		Not reported	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
United States, number	958,308	35,881	...	7,609	...	91,862	...	42,773	...	133,626	...	543,782	...	13,625	...	5,472	...	68,311	...	16,565	...
percent	100.0	...	3.7	...	0.8	...	9.6	...	4.5	...	13.9	...	56.7	...	1.4	...	0.6	...	7.1	...	1.7
New England	80,815	3,060	3.8	587	0.7	7,117	8.8	3,257	4.0	12,298	15.2	43,672	54.0	1,178	1.5	572	0.7	7,406	9.2	1,688	2.1
Connecticut	16,712	636	3.8	89	0.5	1,362	8.1	611	3.7	2,245	13.4	9,393	56.2	240	1.4	135	0.8	1,356	8.1	645	3.9
Maine	5,922	302	5.1	61	1.0	630	10.6	270	4.6	994	16.8	3,042	51.4	111	1.9	23	0.4	415	7.0	74	1.2
Massachusetts	42,463	1,497	3.5	316	0.7	3,699	8.7	1,758	4.1	6,582	15.5	22,277	52.5	618	1.5	369	0.8	4,567	10.8	800	1.9
New Hampshire	6,445	261	4.0	60	1.0	601	9.3	238	3.7	1,027	16.0	3,631	56.3	72	1.1	7	0.1	478	7.4	70	1.1
Rhode Island	5,986	209	3.5	33	0.5	544	9.1	257	4.3	967	16.1	3,451	57.7	54	0.9	20	0.3	382	6.4	69	1.2
Vermont	3,287	155	4.7	28	0.9	281	8.5	123	3.8	483	14.7	1,878	57.1	83	2.5	18	0.6	208	6.3	30	0.9
Middle Atlantic	195,866	6,325	3.2	1,035	0.5	17,061	8.7	7,439	3.8	28,718	14.7	110,094	56.2	2,165	1.1	940	0.5	17,958	9.2	4,123	2.1
New Jersey	31,418	1,008	3.2	155	0.5	2,547	8.1	1,206	3.8	4,617	14.7	18,565	59.1	250	0.8	137	0.4	2,471	7.9	456	1.5
New York	98,667	3,482	3.5	605	0.6	8,593	8.7	3,767	3.8	15,976	16.2	53,964	54.7	1,078	1.1	550	0.6	9,144	9.3	1,510	1.5
Pennsylvania	65,781	1,835	2.8	277	0.4	5,921	9.0	2,466	3.8	8,125	12.3	37,565	57.1	837	1.3	253	0.4	6,343	9.6	2,157	3.3
South Atlantic	143,804	5,223	3.6	1,033	0.7	13,657	9.5	6,430	4.5	20,017	13.9	80,474	56.0	2,789	1.9	1,336	0.9	10,334	7.2	2,512	1.8
Delaware	3,456	99	2.9	7	0.2	251	7.3	205	5.9	428	12.4	2,033	58.8	54	1.5	36	1.0	307	8.9	37	1.1
Dist. of Columbia	5,625	275	4.9	66	1.2	425	7.6	307	5.4	815	14.5	3,041	54.1	107	1.9	111	2.0	413	7.3	65	1.1
Florida	37,517	1,435	3.8	291	0.8	3,581	9.6	1,293	3.4	5,555	14.8	20,944	55.8	668	1.8	152	0.4	2,123	5.7	1,475	3.9
Georgia	16,674	839	5.0	157	0.9	1,966	11.8	860	5.2	2,710	16.2	8,385	50.3	232	1.4	116	0.7	1,199	7.2	210	1.3
Maryland	18,246	660	3.6	142	0.8	1,651	9.0	764	4.2	2,138	11.7	10,680	58.5	325	1.8	325	1.8	1,397	7.7	162	0.9
North Carolina	23,718	633	2.7	139	0.6	2,098	8.8	1,089	4.6	2,987	12.6	13,067	55.1	229	1.0	433	1.8	2,802	11.8	241	1.0
South Carolina	9,967	363	3.6	96	1.0	998	10.0	477	4.8	1,251	12.6	5,436	54.5	717	7.2	73	0.7	515	5.2	41	0.4
Virginia	21,239	705	3.3	92	0.4	1,913	9.0	1,058	5.0	3,131	14.7	12,554	59.1	398	1.9	72	0.4	1,132	5.3	184	0.9
West Virginia	7,364	214	2.9	63	0.6	774	10.5	377	5.1	1,001	13.6	4,335	58.9	59	0.8	18	0.2	446	6.1	97	1.3
East South Central	42,082	1,752	4.2	355	0.8	5,258	12.5	2,384	5.7	5,994	14.2	21,978	52.2	658	1.6	237	0.6	2,936	7.0	530	1.2
Alabama	10,599	526	5.0	78	0.7	1,384	13.1	645	6.1	1,540	14.5	5,190	49.0	180	1.7	70	0.6	757	7.1	229	2.2
Kentucky	11,020	464	4.0	102	0.9	1,248	11.3	543	4.9	1,459	13.2	6,307	57.2	149	1.3	55	0.5	631	5.7	82	0.8
Mississippi	6,476	315	4.8	52	0.8	906	14.0	418	6.5	920	14.2	3,019	46.6	84	1.3	32	0.5	717	11.1	11	0.2
Tennessee	13,989	467	3.3	123	0.9	1,720	12.3	778	5.6	2,075	14.8	7,462	53.3	245	1.8	80	0.6	831	5.9	208	1.5

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Table 9. — Employed registered nurses by type of position in each State and region, 1977 -- Continued

State and region	Total number	Administrator		Consultant		Supervisor or assistant		Instructor		Head nurse or assistant		Staff or general duty nurse		Nurse practitioner		Clinical specialist		Other		Not reported	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
West South Central	63,957	3,082	3.3	753	0.9	9,144	12.3	3,480	5.6	10,864	16.8	30,500	53.3	811	1.8	239	0.6	4,557	5.9	547	1.5
Arkansas	5,716	343	4.8	68	1.2	922	16.3	350	5.6	1,098	17.0	2,516	47.7	118	1.3	29	0.4	265	7.1	44	0.9
Louisiana	11,236	522	4.6	79	0.7	1,594	14.2	638	5.7	1,729	15.4	5,444	48.5	87	0.8	38	0.2	1,020	9.1	93	0.8
Oklahoma	8,107	360	4.4	99	1.2	1,258	15.5	446	5.5	1,274	15.7	4,003	49.4	126	1.6	16	0.2	456	5.6	69	0.9
Texas	38,902	1,857	4.8	526	1.3	5,370	13.8	2,066	5.3	6,743	17.3	18,537	47.7	480	1.2	166	0.4	2,836	7.3	341	0.9
East North Central	185,140	6,338	3.4	1,396	0.8	16,483	8.9	9,034	4.9	23,656	12.8	114,006	61.6	1,911	1.0	778	0.4	9,414	5.1	2,126	1.1
Illinois	49,626	1,795	3.6	422	0.9	4,291	8.6	2,125	4.3	6,582	13.3	29,478	59.4	515	1.0	245	0.5	3,393	6.8	780	1.6
Indiana	20,891	781	3.7	176	0.8	2,022	9.7	987	4.7	2,846	13.6	12,137	58.1	263	1.2	92	0.4	1,111	5.3	498	2.5
Michigan	40,035	1,419	3.6	279	0.7	3,578	8.9	2,237	5.6	5,340	13.3	24,622	61.5	322	0.8	162	0.4	1,634	4.1	442	1.1
Ohio	51,127	1,462	2.8	346	0.7	4,296	8.4	2,261	4.4	6,655	13.0	32,665	63.9	633	1.2	181	0.4	2,349	4.6	299	0.6
Wisconsin	23,461	881	3.8	175	0.7	2,296	9.8	1,424	6.1	2,233	9.5	15,124	64.5	198	0.8	98	0.4	927	4.0	105	0.4
West North Central	83,510	2,884	3.5	869	1.1	7,971	9.5	4,305	5.2	10,086	12.1	50,117	60.0	908	1.1	272	0.3	3,857	4.6	2,261	2.7
Iowa	15,083	459	3.1	158	1.0	1,451	9.6	816	5.4	1,767	11.7	9,175	60.8	137	0.9	43	0.3	949	6.3	128	0.8
Kansas	10,721	357	3.3	136	1.2	1,052	9.8	490	4.6	1,467	13.7	6,215	58.0	179	1.7	36	0.3	606	5.7	187	1.7
Minnesota	22,087	758	3.4	150	0.7	1,759	8.0	918	4.2	2,349	10.6	13,551	61.4	252	1.1	80	0.4	712	3.2	1,558	7.1
Missouri	19,864	760	3.8	227	0.1	2,175	11.0	1,167	5.9	2,706	13.7	11,490	57.9	235	1.2	81	0.4	768	3.9	235	1.2
Nebraska	8,601	259	3.1	130	1.5	805	9.3	523	6.1	944	11.0	5,352	62.2	36	0.4	20	0.2	480	5.6	52	0.6
North Dakota	3,670	129	3.5	21	0.6	376	10.2	211	5.7	386	10.5	2,286	62.3	43	1.2	3	0.1	183	5.0	32	0.9
South Dakota	3,504	162	4.6	29	0.8	353	10.1	180	5.1	467	13.3	2,048	58.5	26	0.8	11	0.3	159	4.5	69	2.1
Mountain	48,267	1,517	3.1	387	0.8	3,894	8.1	1,790	3.7	5,598	11.6	28,121	58.3	998	2.1	239	0.5	5,091	10.5	607	1.3
Arizona	12,825	358	2.8	73	0.5	918	7.2	456	3.6	1,432	11.2	7,396	57.6	215	1.7	57	0.4	1,794	14.0	126	1.0
Colorado	15,138	416	2.8	118	0.8	1,135	7.5	438	2.9	1,726	11.4	8,683	57.4	406	2.7	129	0.9	1,985	13.1	102	0.7
Idaho	3,463	110	3.2	39	1.1	345	10.0	157	4.5	463	13.4	1,921	55.5	62	1.8	4	0.1	303	8.7	59	1.7
Montana	3,869	143	3.7	32	0.8	328	8.5	162	4.2	417	10.8	2,466	63.7	52	1.4	12	0.3	215	5.5	42	1.1
Nevada	2,615	90	3.4	22	0.8	266	10.2	96	3.7	407	15.6	1,485	56.8	52	2.0	9	0.3	160	6.1	28	1.1
New Mexico	6,321	166	3.6	32	0.8	606	9.4	180	4.2	478	11.1	2,444	56.6	103	2.4	31	0.7	386	8.9	97	2.3
Utah	4,276	173	4.1	61	1.4	331	7.7	235	5.5	492	11.5	2,632	61.6	79	1.8	11	0.3	159	3.7	103	2.4
Wyoming	1,760	61	3.5	10	0.6	167	9.5	66	3.8	183	10.4	1,094	62.2	29	1.6	6	0.4	89	5.1	50	2.9
Pacific	114,867	4,700	4.1	1,215	1.1	11,277	9.8	4,656	4.1	16,207	14.1	64,813	56.4	2,207	1.9	861	0.7	6,758	5.9	2,173	1.9
Alaska	1,670	76	4.4	19	1.1	153	9.2	57	3.4	200	12.0	985	59.0	48	2.9	6	0.4	97	5.8	31	1.8
California	80,372	3,380	4.2	899	1.1	8,177	10.2	3,312	4.1	11,318	14.1	44,678	55.6	1,681	2.1	618	0.8	4,808	6.0	1,491	1.8
Hawaii	3,190	129	4.0	17	0.5	287	9.0	105	3.3	388	12.2	1,929	60.5	48	1.5	32	1.0	216	6.8	39	1.2
Oregon	12,538	454	3.6	89	0.7	1,146	9.1	487	3.9	1,907	15.2	7,336	58.5	218	1.7	63	0.5	584	4.7	256	2.1
Washington	17,097	663	3.9	191	1.1	1,514	8.9	695	4.1	2,384	13.9	9,887	57.8	212	1.2	142	0.8	1,053	6.2	356	2.1

Source: American Nurses' Association. 1977 Inventory of Registered Nurses. Kansas City. Unpublished data.

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Table 10.--Bedside nursing personnel 1/ per 100 average daily patients in all AHA hospitals, by census region and type of hospital, 1972

Census region and type of hospital	Number of hospitals	Average daily patient census	Nursing personnel per 100 patients			
			Total	Registered nurses	Licensed practical nurses	Aides, orderlies, attendants
United States	7,035	1,172,014	74.8	21.5	16.4	36.9
Federal	400	114,757	54.9	17.9	7.9	29.1
Non-Federal	6,635	1,057,347	77.0	21.9	17.3	37.8
Short-term general and allied special	5,832	671,280	99.6	33.5	24.6	41.6
Psychiatric	500	329,046	36.4	1.6	4.1	30.7
Tuberculosis	75	8,214	47.4	4.7	12.8	29.9
Other long term	228	48,807	49.9	5.2	8.6	36.1
Northeast	1,274	347,467	67.4	22.0	13.0	32.4
Federal	56	24,796	48.0	15.1	5.0	27.9
Non-Federal	1,218	322,671	68.9	22.6	13.6	32.7
Short-term general and allied special	967	174,845	94.7	39.7	21.6	33.4
Psychiatric	148	123,249	36.0	1.6	2.8	31.6
Tuberculosis	9	823	54.8	7.3	17.4	30.1
Other long term	94	23,754	52.4	6.2	10.7	35.5
North Central	1,991	319,454	77.8	22.6	15.3	40.0
Federal	79	25,859	50.6	15.4	6.1	29.2
Non-Federal	1,912	293,595	80.2	23.2	16.1	40.9
Short-term general and allied special	1,697	206,963	96.8	32.1	21.4	43.3
Psychiatric	141	72,604	39.8	1.7	2.6	35.5
Tuberculosis	24	1,875	46.2	6.4	10.1	29.7
Other long term	50	12,153	44.9	2.9	6.5	35.5
South	2,426	360,901	74.6	16.0	18.7	39.8
Federal	152	44,886	55.5	18.0	8.8	28.7
Non-Federal	2,274	316,015	77.3	15.7	20.1	41.4
Short-term general and allied special	2,049	200,102	101.9	24.2	30.0	47.7
Psychiatric	138	104,431	33.1	.8	2.5	29.8
Tuberculosis	36	4,774	47.1	2.8	12.6	31.7
Other long term	51	6,708	52.6	3.8	7.9	40.9
West	1,344	144,282	89.3	31.9	22.0	35.4
Federal	113	19,216	68.4	24.7	11.9	31.8
Non-Federal	1,231	125,066	92.5	33.0	23.6	36.0
Short-term general and allied special	1,119	89,370	111.9	44.0	26.0	41.8
Psychiatric	73	28,762	43.0	4.2	20.1	18.6
Tuberculosis	6	742	45.0	10.0	15.2	19.8
Other long term	33	6,192	49.5	9.2	5.3	35.0

1/ Includes bedside general duty staff working full time plus one-half of those working part time, as of the study week.

Source: U.S. Department of Health, Education, and Welfare, Division of Nursing, Nursing Personnel in Hospitals: 1972 Survey of Hospitals Registered with the American Hospital Association. DHEW Pub. No. (HRA) 75-16. Washington, U.S. Government Printing Office, 1974.

Table 11.--Bedside nursing personnel[1] per 100 average daily patients in non-Federal short-term general allied and special hospitals, by size of hospital, 1972

Number of beds	Total	RNs	LPNs	Aides, etc.
Total	99.6	33.5	24.6	41.6
6-24	121.2	29.2	23.9	68.1
25-49	104.9	18.9	25.9	60.1
50-99	101.9	21.3	27.4	53.2
100-199	103.2	31.0	27.7	44.4
200-299	102.7	38.7	24.5	39.6
300-399	98.4	38.0	23.1	37.3
400-499	99.3	37.2	24.1	38.0
500-999	96.8	37.1	23.8	36.0
1,000 and over	74.6	21.5	16.0	37.1

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[1] Includes bedside general duty staff working full time plus one-half of those working part time, as of the study week.

Source: U.S. Department of Health, Education, and Welfare, Division of Nursing, Nursing Personnel in Hospitals: 1972 Survey of Hospitals Registered with the American Hospital Association. DHEW Publication No. (HRA) 75-16, Washington, U.S. Government Printing Office, 1974.

Table 12.--Bedside nursing personnel per 100 average daily patients in AHA non-Federal short-term general and allied special hospitals, by State, 1972

State	Number of hospitals	Full-time equivalent Nursing personnel per 100 patients			
		Total	Registered nurses	Licensed practical nurses	Aides, orderlies, attendants
United States	5,832	99.6	33.5	24.6	41.6
Alabama	128	102.1	20.7	35.4	45.9
Alaska	14	127.4	56.1	28.4	42.9
Arizona	60	117.2	43.2	24.7	49.3
Arkansas	89	104.9	11.3	40.2	53.4
California	536	111.5	44.4	24.2	42.9
Colorado	78	108.6	47.3	21.3	40.0
Connecticut	41	100.8	41.5	22.9	36.4
Delaware	7	106.4	39.8	26.2	40.3
District of Columbia	14	103.7	42.5	25.3	35.9
Florida	170	102.9	33.2	24.8	44.9
Georgia	146	110.6	24.5	29.0	57.1
Hawaii	22	94.6	43.1	31.1	20.4
Idaho	48	111.5	36.0	48.6	26.9
Illinois	250	95.1	36.7	17.5	40.9
Indiana	112	96.7	28.4	17.5	50.8
Iowa	136	95.3	32.9	19.2	43.2
Kansas	142	100.1	25.8	16.1	58.1
Kentucky	109	99.9	23.4	24.9	51.6
Louisiana	133	106.6	19.7	27.7	59.2
Maine	45	97.8	35.2	25.5	37.0
Maryland	47	106.3	38.8	19.3	48.1
Massachusetts	138	104.1	50.5	23.7	30.0
Michigan	202	95.7	29.7	26.0	40.0
Minnesota	176	103.4	40.2	25.2	38.1
Mississippi	100	103.4	15.3	33.8	54.3
Missouri	129	92.2	23.1	20.3	48.8
Montana	59	102.6	34.0	20.2	48.4
Nebraska	97	111.1	34.0	21.5	55.6
Nevada	18	115.8	34.2	34.7	46.9
New Hampshire	31	109.2	47.3	27.1	34.8

Table 12.--Bedside nursing personnel per 100 average daily patients in AHA non-Federal short-term general and allied special hospitals, by State, 1972--Continued

State	Number of hospitals	Full-time equivalent Nursing personnel per 100 patients: Total	Registered nurses	Licensed practical nurses	Aides, orderlies, attendants
New Jersey	107	91.4	39.8	21.1	30.5
New Mexico	41	127.4	37.2	33.3	56.9
New York	334	94.0	36.7	20.0	37.3
North Carolina	135	97.0	26.7	25.5	44.7
North Dakota	56	114.6	32.9	27.1	54.7
Ohio	195	93.6	32.5	25.3	35.8
Oklahoma	121	112.5	17.4	27.4	67.2
Oregon	78	113.0	43.0	23.2	46.9
Pennsylvania	240	88.8	38.4	21.3	29.1
Rhode Island	14	105.5	47.1	33.2	25.2
South Carolina	70	98.1	23.7	26.7	47.7
South Dakota	52	108.9	33.8	22.3	52.8
Tennessee	136	91.6	17.1	30.6	43.9
Texas	477	103.1	20.1	40.6	42.5
Utah	31	107.8	43.2	30.5	34.0
Vermont	17	105.2	47.5	33.4	24.3
Virginia	98	95.5	30.7	25.0	39.8
Washington	107	112.8	49.7	36.2	26.8
West Virginia	69	99.5	24.8	26.6	48.0
Wisconsin	150	97.4	32.4	19.4	45.6
Wyoming	27	118.0	41.4	20.2	56.3

Source: U.S. Department of Health, Education, and Welfare, Division of Nursing. Nursing Personnel in Hospitals: 1972 Survey of Hospitals Registered with the American Hospital Association. DHEW Pub. No. (HRA) 75-16, Washington, U.S. Government Printing Office, 1974.

Table13.-- Full-time equivalent personnel in hospitals in the United States, by selected type of personnel and type of hospital, 1973-1979

Year and type of personnel	Total		Type of hospital					
			General		Psychiatric		Other	
	Number	Percent change over prior year	Number	Percent change over prior year	Number	Percent change over prior year	Number	Percent change over prior year
1973								
Total personnel	2,768,607	+3.7	2,330,350	+4.5	332,636	-1.9	105,621	+4.8
Registered nurses	446,387	+4.9	413,037	+5.1	20,923	-0.9	12,427	+6.3
Licensed practical nurses	222,599	+3.2	198,742	+3.8	16,084	-5.6	7,773	+7.2
1974								
Total personnel	2,918,736	+5.4	2,475,181	+6.2	338,187	+1.7	105,368	-0.2
Registered nurses	478,577	+7.2	443,617	+7.4	22,651	+8.3	12,309	-0.9
Licensed practical nurses	233,534	+4.9	209,708	+5.5	16,207	+0.8	7,619	-2.0
1975								
Total personnel	3,022,597	+3.6	2,593,708	+4.8	323,917	-4.2	104,972	-0.4
Registered nurses	510,118	+6.6	474,876	+7.0	22,632	-0.1	12,610	+2.4
Licensed practical nurses	239,949	+2.7	217,822	+3.9	14,800	-8.7	7,327	-3.8
1976								
Total personnel	3,107,614	+2.8	2,691,683	+3.8	315,336	-2.6	100,595	-4.2
Registered nurses	538,141	+5.5	502,786	+5.9	22,956	+1.4	12,399	-1.7
Licensed practical nurses	243,586	+1.5	221,080	+1.5	15,756	+6.5	6,750	-7.9
1977								
Total personnel	3,212,894	+3.4	2,789,434	+3.6	317,402	+0.7	106,058	+5.4
Registered nurses	570,117	+5.9	532,692	+6.0	23,949	+4.3	13,476	+8.7
Licensed practical nurses	253,184	+3.9	227,596	+3.0	18,539	+17.7	7,049	+4.4
1978								
Total personnel	3,280,231	+2.1	2,865,470	+2.7	308,823	-2.7	105,938	-0.2
Registered nurses	597,471	+4.8	559,579	+5.0	23,674	-1.2	14,218	+5.5
Licensed practical nurses	253,641	+0.2	229,450	+0.8	17,108	-7.7	7,083	+0.5
1979								
Total personnel	3,381,680	+3.1	2,960,845	+3.3	312,588	+1.2	108,247	+2.1
Registered nurses	627,215	+5.0	588,230	+5.1	24,434	+3.2	14,551	+2.3
Licensed practical nurses	257,209	+1.4	232,293	+1.2	17,583	+2.8	7,333	+3.5

Source: American Hospital Association. Hospital Statistics, Data from the American Hospital Association Annual Survey, Annual editions, 1972-1980.

Table 14. -- Full-time registered nurses and licensed practical/vocational nurses per 1,000 residents in nursing homes, by State and region, 1976

State and region	RN	LPN/ LVN
United States	35	48
New England	46	39
Connecticut	55	35
Maine	39	32
Massachusetts	39	42
New Hampshire	72	40
Rhode Island	48	38
Vermont	44	46
Middle Atlantic	58	57
New Jersey	61	39
New York	57	58
Pensylvania	58	68
South Atlantic	36	62
Delaware	45	29
District of Columbia	44	47
Florida	47	62
Georgia	27	65
Maryland	39	52
North Carolina	32	41
South Carolina	42	56
Virginia	31	52
West Virginia	38	52
East South Central	23	79
Alabama	22	74
Kentucky	20	39
Mississippi	36	93
Tennessee	21	66
West South Central	16	67
Arkansas	20	54
Louisiana	20	61
Oklahoma	15	46
Texas	15	77
East North Central	34	41
Illinois	35	37
Indiana	32	34
Michigan	31	37
Ohio	38	62
Wisconsin	30	30
West North Central	24	33
Iowa	26	34
Kansas	21	27
Minnesota	28	30
Missouri	21	42
Nebraska	20	30
North Dakota	26	26
South Dakota	28	21
Mountain	47	48
Arizona	78	39
Colorado	44	43
Idaho	42	48
Montana	45	53
Nevada	81	89
New Mexico	33	62
Utah	32	58
Wyoming	41	39
Pacific	37	40
Alaska	106	62
California	33	42
Hawaii	89	66
Oregon	36	29
Washington	44	34

Source: Inpatient Health Facilities as Reported from the 1976 MFI Survey, Vital and Health Statistics, Series 14, No. 23, NCHS, PHS, DHHS, January 1980.

Table 15. — Distribution of agencies and nurses employed for community health work, January 1979

Type of agency	Number of agencies	Total nurses	Registered nurses			Licensed practical nurses		
			Total	Full time	Part time	Total	Full time	Part time
Total	13,753	88,125	81,219	69,294	11,925	6,906	4,786	2,120
National/federal agency	8	1,265	1,265	—	—	—	—	—
University	287	1,335	1,335	—	—	—	—	—
State agency	214	3,346	3,185	2,801	384	161	158	3
Local agency	13,244	82,179	75,434	63,893	11,541	6,745	4,628	2,117
Official	2,916	31,241	28,892	24,585	4,307	2,349	2,131	718
Health department	2,532	28,523	26,598	22,713	3,885	1,925	1,716	209
Other official	384	2,718	2,294	1,872	422	424	415	9
Organized categorical program	681	3,707	3,076	2,347	729	631	512	119
Mental health	273	1,589	1,343	1,096	247	246	224	22
Neighborhood health center/OEO	236	1,136	898	725	173	238	197	41
Other categorical	172	982	835	526	309	147	91	56
Combination	52	1,721	1,608	1,386	222	113	106	7
Non-official	649	10,729	10,008	8,036	1,972	721	584	137
Visiting nurse association	617	10,652	9,936	7,988	1,948	716	579	137
Other non-official	32	77	72	48	24	5	5	—
Organized home health	1,290	12,762	10,224	6,818	3,406	2,538	908	1,630
Hospital based program	452	2,792	2,618	2,181	437	174	137	37
Other home health	838	9,970	7,606	4,637	2,969	2,364	771	1,593
Board of education	7,656	22,019	21,626	20,721	905	393	387	6

Source: U.S. Department of Health and Human Services, Division of Nursing. Survey of Community Health Nursing, 1979. Unpublished preliminary data.

Table 16. -- Ratios of full-time and part-time registered nurses employed for community health work in State and local agencies, with and without local boards of education, January 1979

	State and Local Agencies Including Local Boards of Education		State and Local Agencies Excluding Local Boards of Education	
State	Nurses Per 100,000 Population	Population Per Nurse	Nurses Per 100,000 Population	Population Per Nurse
U.S. and Territories	38.1	2,621	27.6	3,615
Alabama	25.9	3,857	23.8	4,201
Alaska	50.4	1,980	29.8	3,355
Arizona	35.0	2,855	16.6	6,004
Arkansas	24.8	4,022	19.7	5,058
California	27.7	3,602	16.7	5,973
Colorado	45.4	2,198	28.7	3,473
Connecticut	87.7	1,139	72.7	1,375
Delaware	63.4	1,577	35.9	2,784
District of Columbia	46.6	2,143	46.6	2,143
Florida	35.9	2,780	35.7	2,799
Georgia	40.4	2,473	39.9	2,503
Hawaii	32.4	3,080	29.2	3,414
Idaho	29.9	3,339	23.8	4,189
Illinois	30.4	3,284	19.7	5,071
Indiana	32.2	3,099	20.5	4,856
Iowa	37.9	2,638	18.0	5,527
Kansas	35.6	2,803	20.8	4,795
Kentucky	31.0	3,223	29.5	3,384
Louisiana	24.9	4,005	21.8	4,576
Maine	50.5	1,976	36.1	2,763
Maryland	35.9	2,783	33.6	2,975
Massachusetts	54.8	1,822	40.0	2,497
Michigan	22.7	4,398	20.9	4,777
Minnesota	49.1	2,035	35.5	2,809
Mississippi	37.7	2,651	34.1	2,930

Table 16. -- Ratios of full-time and part-time registered nurses employed for community health work in State and local agencies, with and without local boards of education, January 1979 -- Continued

State	State and Local Agencies Including Local Boards of Education: Nurses Per 100,000 Population	State and Local Agencies Including Local Boards of Education: Population Per Nurse	State and Local Agencies Excluding Local Boards of Education: Nurses Per 100,000 Population	State and Local Agencies Excluding Local Boards of Education: Population Per Nurse
Missouri	36.1	2,768	23.3	4,291
Montana	38.4	2,602	33.7	2,966
Nebraska	34.7	2,877	15.4	6,477
Nevada	30.6	3,265	22.0	4,529
New Hampshire	90.4	1,105	48.1	2,077
New Jersey	48.0	2,081	23.3	4,292
New Mexico	38.1	2,623	21.8	4,579
New York	33.4	2,991	22.0	4,539
North Carolina	29.5	3,383	28.4	3,512
North Dakota	29.9	3,335	29.2	3,421
Ohio	31.8	3,135	24.8	4,017
Oklahoma	20.6	4,852	14.2	7,036
Oregon	40.9	2,443	33.2	3,004
Pennsylvania	42.0	2,379	22.1	4,510
Rhode Island	47.6	2,097	31.2	3,203
South Carolina	39.2	2,549	32.3	3,092
South Dakota	28.8	3,462	22.9	4,360
Tennessee	33.5	2,979	32.4	3,086
Texas	24.5	4,069	12.6	7,907
Utah	29.9	3,342	28.6	3,496
Vermont	95.3	1,048	61.0	1,637
Virginia	43.7	2,285	35.7	2,795
Washington	27.2	3,665	20.9	4,764
West Virginia	27.4	3,646	21.9	4,558
Wisconsin	33.8	2,955	30.7	3,250
Wyoming	35.3	2,830	18.0	5,555
Guam	78.8	1,268	29.4	3,399
Puerto Rico	46.8	2,133	43.3	2,306
Virgin Islands	140.8	709	108.8	918

Source: U.S. Department of Health and Human Services. Survey of Community Health Nursing, 1979. Unpublished preliminary data.

Table 17. — Latest data on average compensation of full-time nursing personnel, by field of nursing and type of position, 1978-1980

Field of nursing and type of position	Estimated average annual salary or range of average annual salaries 1/ — Date of survey 1978	Estimated average annual salary or range of average annual salaries 1/ — Date of survey 1980	Source of data
Hospitals 2/			Bureau of Labor Statistics Industry Wage-Survey: Hospital and Nursing Homes
Directors of nursing	$19,739-$29,182		
Supervisors	15,829- 21,320		
Head nurses	14,726- 19,802		
Clinical specialists	13,749- 20,821		
Nurse anesthetists	18,221- 25,211		
General duty nurses	12,168- 17,264		
Nursing instructors	13,354- 20,322		
Licensed practical nurses	8,736- 13,187		
Nursing aides	6,822- 12,043		
Nursing homes 3/			Bureau of Labor Statistics Industry Wage-Survey: Hospital and Nursing Homes
Head nurses	$10,379-$19,261		
General duty nurses	10,920- 16,973		
Licensed practical nurses	8,070- 14,893		
Nursing aides	5,720- 11,669		
Community health			
Local official agency			NLN, Data on Home Health Agencies and Community Nursing Services
Nurse directors		$26,100	
Supervising nurses		18,788	
Staff nurses		14,913	
Non-official agency			
Nurse directors		$22,563	
Supervising nurses		17,103	
Staff nurses		14,314	
Board of education			
Supervising nurses		$21,150	
Staff nurses		16,482	
All community health agencies			NLN, Data on Home Health Agencies and Community Nursing Services
Licensed practical nurses		$11,280	
Public health assistants		9,528	
Home health aides		8,088	
Other aux. personnel		9,660	
Occupational health-RN	$14,586		Bureau of Labor Statistics Occupational Earnings in All Metropolitan Areas
Physician's office-RN		$13,780	Owens, Arthur, "What your Colleagues are Paying Assistants." Medical Economics, March 1981

1/ For the hospital and nursing home fields, this is the range of estimated average salaries among the metropolitan areas covered in the studies.

2/ Estimated average annual salary was converted from hourly earnings, based on average standard workweek in each metropolitan area from 1972 hospital survey. Standard 40-hour week was assumed for certain localities and positions not surveyed in 1978.

3/ Estimated average annual salary was converted from hourly earnings, based on average standard workweek in each metropolitan area as indicated by data in 1978 nursing home survey.

Note: This table makes no attempt to compare estimated salaries for years given.

Table 18 . -- Median annual salaries of nurses newly licensed in 1979 and employed in nursing on a full-time basis six months after licensure, by type of educational preparation and geographic location

Region	Registered nurses				Practical Nurse
	Total	Diploma	Associate degree	Baccalaureate	
United States	$12,700[1]	$12,400	$12,500	$13,100	$ 9,000[1]
New England	12,520	12,180	12,270	12,790	10,040
Middle Atlantic	12,970	12,270	12,880	13,570	9,740
East North Central	13,350	13,170	13,110	13,680	9,640
West North Central	12,130	11,870	12,120	12,490	8,510
South Atlantic	11,880	11,820	11,780	12,070	8,510
East South Central	12,100	12,140	11,840	12,650	8,160
West South Central	12,510	12,650	12,170	12,800	8,590
Mountain	11,970	12,190	11,790	12,150	8,720
Pacific	13,970	13,810	13,950	13,960	10,080

[1] Based on those respondents who were located in the United States and reported salary range for registered nurses, the total respondents included were 47,050 and for practical nurses 19,438. The survey excluded all newly licensed nurses in Iowa, the majority of those in Colorado, and the practical nurses (vocational nurses) in California.

Source: Compiled by the Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services from unpublished data from National League for Nursing, Survey of Employment Opportunities for Newly-Licensed Nurses.

Table 19. -- Average annual salary of registered nurses employed full time in nursing by region and field of employment, September 1977

Field of employment	Total	West	North Central	South	Northeast
Total	12,900	13,900	13,000	12,500	12,800
Hospital	13,150	14,200	13,200	12,600	13,000
Nursing home	12,300	13,400	12,000	11,400	12,500
Nursing education	14,800	16,600	15,800	14,000	13,800
Public health	12,900	14,900	12,400	12,400	12,900
Student health	11,500	12,900	10,500	10,700	11,600
Occupational health	13,600	14,000	15,100	13,100	12,600
Physician's office	10,400	10,700	10,500	10,000	10,600
Self employment	18,000	1/	1/	1/	1/
Private duty	11,700	1/	1/	12,000	11,200
Federal agency, state board of nursing	15,600	1/	1/	1/	1/
Temporary placement service	1/	1/	1/	1/	1/
Other	13,400	1/	1/	1/	1/
Not reported	--	--	--	--	--

1/ Insufficient number of cases to compute average.

Source: Roth, Aleda, et al., 1977 National Sample Survey of Registered Nurses, National Technical Information Service, Springfield, VA, 1979.

Table 20. -- Average gross annual nursing income of graduates of nurse practitioner programs employed full time, by region and type of program, 1977 1/

Region	Certificate No.	Certificate Average income	Master's No.	Master's Average income	Total No.	Total Average income
West	47	$14,553	18	$14,883	65	$14,631
Midwest	35	14,086	7	14,714	42	14,190
Northeast . . .	61	14,000	18	14,778	79	14,177
South	92	14,272	9	17,444	101	14,554
Total	235	14,230	52	15,250	287	14,415

1/ Based on data from 655 nurse practitioners who graduated from nurse practitioner programs between March and September 1977.

Source: Sultz, et al., Longitudinal Study of Nurse Practitioners: Phase III, Division of Nursing, HRA, PHS, DHEW, 1980.

Table 21. -- Employment setting of graduates of nurse practitioner programs who worked as practitioners, 1977

Employment setting	Percent employed
Total [1/]	100.0
Inhospital practice	11.1
Patient unit	8.3
Emergency room	2.8
Ambulatory clinical practice	61.0
Private practice	17.3
Prepaid group practice	4.2
Hospital-based clinic	13.9
Community based clinic or center	25.6
Nonhospital institution setting	9.4
School for mental/physical handicap	2.8
Grades 1-12 public school	1.7
College health program	4.2
Other	0.7
Nonhospital community setting	10.8
Health department or home health	10.4
Social services or agency	0.4
School of nursing	0.7
Extended care facility	4.9
Industry	2.1

[1/] Based on data from 655 nurse practitioners who graduated from nurse practitioner programs between March and September 1977.

Source: Sultz, et al., Longitudinal Study of Nurse Practitioners: Phase III, Division of Nursing, HRA, PHS, DHEW, 1980.

Table 22. — Projected number of graduates from basic nursing programs preparing registered nurses, by type of program (Series A and B), academic years 1974-1975 through 1999-2000

Academic year	Series A				Series B			
	Total	AD	Dip.	Bacc.	Total	AD	Dip.	Bacc.
1974-75[1]	73,915	32,183	21,562	20,170	73,915	32,183	21,562	20,170
1975-76[1]	77,065	34,625	19,861	22,579	77,065	34,625	19,861	22,579
1976-77[1]	77,755	36,289	18,014	23,452	77,755	36,289	18,014	23,452
1977-78[1]	77,874	36,556	17,131	24,187	77,874	36,556	17,131	24,187
1978-79[1]	77,148	36,280	15,820	25,048	77,148	36,280	15,820	25,048
1979-80[1]	75,523	36,034	14,495	24,994	75,523	36,034	14,495	24,994
1980-81	75,800	36,600	13,500	25,700	78,400	38,400	13,500	26,500
1981-82	75,000	36,600	12,700	25,700	80,300	39,300	12,700	28,300
1982-83	71,800	34,300	11,800	25,700	81,500	40,400	11,800	29,300
1983-84	70,600	34,300	11,000	25,300	81,500	40,700	11,000	29,800
1984-85	69,300	34,400	10,200	24,700	81,500	41,100	10,200	30,200
1985-86	67,700	34,400	9,500	23,800	81,100	41,400	9,500	30,200
1986-87	65,600	34,400	8,800	22,400	80,100	41,700	8,800	29,600
1987-88	63,800	34,300	8,200	21,300	79,100	41,700	8,200	29,200
1988-89	62,700	34,200	7,600	20,900	78,600	41,600	7,600	29,400
1989-90	62,100	34,200	7,100	20,800	78,600	41,500	7,100	30,000
1990-91	61,700	33,900	6,600	21,200	78,900	41,200	6,600	31,100
1991-92	60,400	33,500	6,200	20,700	77,900	40,700	6,200	31,000
1992-93	59,900	33,100	5,700	21,100	78,100	40,200	5,700	32,200
1993-94	56,700	32,600	5,300	18,800	74,400	39,600	5,300	29,500
1994-95	54,500	32,100	4,900	17,500	71,900	39,000	4,900	28,000
1995-96	53,000	31,600	4,600	16,800	70,500	38,400	4,600	27,500
1996-97	52,000	31,200	4,300	16,500	70,900	37,900	4,300	28,700
1997-98	51,600	30,800	4,000	16,800	69,900	37,500	4,000	28,400
1998-99	51,300	30,600	3,700	17,000	70,100	37,100	3,700	29,300
1999-2000	51,300	30,400	3,400	17,500	70,800	36,900	3,400	30,500

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[1] Actual data reported by the National League for Nursing for graduates of United States schools only.

Sources: National League for Nursing, State Approved Schools of Nursing--RN. Annual editions, 1976-80.

Estimates prepared by the Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Table 23. — Projected number of graduates from basic nursing programs preparing registered nurses, by type of program (Series C and D), academic years 1974-1975 through 1999-2000

Academic year	Series C				Series D			
	Total	AD	Dip.	Bacc.	Total	AD	Dip.	Bacc.
1974-75[1]	73,915	32,183	21,562	20,170	73,915	32,183	21,562	20,170
1975-76[1]	77,065	34,625	19,861	22,579	77,065	34,625	19,861	22,579
1976-77[1]	77,755	36,289	18,014	23,452	77,755	36,289	18,014	23,452
1977-78[1]	77,874	36,556	17,131	24,187	77,874	36,556	17,131	24,187
1978-79[1]	77,148	36,280	15,820	25,048	77,148	36,280	15,820	25,048
1979-80[1]	75,523	36,034	14,495	24,994	75,523	36,034	14,495	24,994
1980-81	73,400	34,200	13,500	25,700	73,400	34,200	13,500	25,700
1981-82	71,500	33,100	12,700	26,300	71,500	33,100	12,700	25,700
1982-83	70,600	31,800	11,800	27,000	69,300	31,800	11,800	25,700
1983-84	68,700	30,000	11,000	27,700	66,300	30,000	11,000	25,300
1984-85	66,800	28,200	10,200	28,400	63,100	28,200	10,200	24,700
1985-86	64,900	26,400	9,500	29,000	59,700	26,400	9,500	23,800
1986-87	63,400	24,600	8,800	30,000	55,800	24,600	8,800	22,400
1987-88	63,200	24,500	8,200	30,500	54,000	24,500	8,200	21,300
1988-89	63,100	24,400	7,600	31,100	52,900	24,400	7,600	20,900
1989-90	63,300	24,400	7,100	31,800	52,300	24,400	7,100	20,800
1990-91	63,300	24,200	6,600	32,500	52,000	24,200	6,600	21,200
1991-92	63,200	23,900	6,200	33,100	50,800	23,900	6,200	20,700
1992-93	63,200	23,700	5,700	33,800	50,500	23,700	5,700	21,100
1993-94	63,100	23,300	5,300	34,500	47,400	23,300	5,300	18,800
1994-95	63,000	22,900	4,900	35,200	45,300	22,900	4,900	17,500
1995-96	63,000	22,600	4,600	35,800	44,000	22,600	4,600	16,800
1996-97	63,100	22,300	4,300	36,500	43,100	22,300	4,300	16,500
1997-98	63,200	22,000	4,000	37,200	42,800	22,000	4,000	16,800
1998-99	63,400	21,800	3,700	37,900	42,500	21,800	3,700	17,000
1999-2000	63,700	21,700	3,400	38,600	42,600	21,700	3,400	17,500

[1] Actual data reported by the National League for Nursing for graduates of United States schools only.
Sources: National League for Nursing, *State-Approved Schools of Nursing--RN*. Annual editions, 1976-80. Estimates prepared by the Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Table 24. -- Projections of national active supply of registered nurses by educational preparation (Series A), 1980-2000

As of January 1	Total number of nurses					Full-time equivalencies				
	Total RNs 1/	AD/Dip.	Bacc.	Mas. & Doct.	RNs per 100,000 pop. 1/	Total RNs 1/	AD/Dip.	Bacc.	Mas. & Doct.	RNs per 100,000 pop. 1/
1980	1,119,100	833,500	232,500	53,100	506	945,700	692,200	203,800	49,700	428
1981	1,163,800	856,100	250,300	57,400	520	983,800	710,800	219,300	53,600	440
1982	1,204,200	875,100	267,500	61,600	533	1,017,700	726,100	234,000	57,700	450
1983	1,245,400	895,100	284,300	66,100	546	1,052,700	742,600	248,300	61,800	462
1984	1,282,800	911,600	300,000	71,200	557	1,084,300	756,100	261,500	66,700	471
1985	1,316,600	925,400	314,800	76,400	566	1,112,600	767,100	273,900	71,600	479
1986	1,350,700	939,800	328,900	82,000	576	1,141,400	779,000	285,600	76,900	487
1987	1,381,800	951,900	342,100	87,800	584	1,168,000	789,100	296,600	82,300	493
1988	1,412,600	965,700	353,200	93,700	591	1,194,400	800,900	305,600	87,900	500
1989	1,441,200	977,900	362,900	100,400	598	1,218,900	811,200	313,500	94,200	506
1990	1,467,600	988,600	372,000	107,000	604	1,241,500	820,100	321,000	100,400	511
1991	1,493,700	999,200	380,600	113,800	610	1,264,100	829,200	328,100	106,800	516
1992	1,518,700	1,007,900	389,600	121,200	615	1,286,500	837,000	335,800	113,700	521
1993	1,543,700	1,017,000	397,800	128,800	620	1,308,800	845,100	342,800	120,900	526
1994	1,567,800	1,024,900	406,000	136,900	626	1,330,600	852,200	349,900	128,400	531
1995	1,588,600	1,031,400	412,100	145,100	630	1,349,400	858,000	355,200	136,200	535
1996	1,607,200	1,037,200	416,700	153,400	633	1,366,500	863,300	359,200	143,900	538
1997	1,623,200	1,040,800	420,100	162,300	635	1,381,700	867,100	362,300	152,300	541
1998	1,638,600	1,044,500	422,500	171,600	638	1,396,400	870,700	364,600	161,000	543
1999	1,652,600	1,046,700	424,600	181,200	639	1,410,000	873,100	366,800	170,700	546
2000	1,666,000	1,048,900	426,000	191,000	641	1,423,000	875,400	368,300	179,300	548

1/ Population data used for computation of nurse-population ratios is based on Series II projections from the Bureau of the Census, U.S. Department of Commerce as reported in Projections of the Population of the United States, 1977-2050, Series P-25, No. 704, July 1977.

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Table 25. -- Projections of national active supply of registered nurses by educational preparation (Series B), 1980-2000

As of January 1	Total number of nurses: Total RNs 1/	AD/Dip.	Bacc.	Mas. & Doct.	RNs per 100,000 pop. 1/	Full-time equivalencies: Total RNs 1/	AD/Dip.	Bacc.	Mas. & Doct.	RNs per 100,000 pop. 1/
1980	1,119,100	833,500	232,500	53,100	506	945,700	692,200	203,800	49,700	428
1981	1,164,400	856,100	250,900	57,500	520	984,400	710,800	219,800	53,700	440
1982	1,206,700	876,200	268,600	61,900	534	1,020,100	727,100	235,000	58,000	451
1983	1,252,000	898,200	287,300	66,500	549	1,058,700	745,300	251,100	62,300	464
1984	1,296,700	918,600	305,900	72,100	563	1,096,900	762,300	267,000	67,600	476
1985	1,338,700	936,700	324,300	77,700	576	1,132,500	777,000	282,700	72,800	487
1986	1,382,100	955,400	342,800	83,900	589	1,169,600	792,700	298,300	78,600	499
1987	1,423,300	971,900	361,200	90,300	601	1,205,100	806,500	314,000	84,600	509
1988	1,464,900	990,100	377,800	97,100	613	1,240,900	821,900	328,000	91,000	519
1989	1,504,800	1,006,600	393,500	104,700	624	1,275,300	835,800	341,300	98,200	529
1990	1,542,600	1,021,300	408,800	112,600	635	1,307,800	848,000	354,200	105,600	538
1991	1,580,400	1,035,700	423,900	120,800	645	1,340,500	860,300	366,900	113,300	547
1992	1,617,500	1,048,700	439,700	129,800	655	1,373,300	871,000	380,600	121,800	556
1993	1,654,500	1,060,400	454,700	139,400	665	1,406,000	881,800	393,400	130,800	565
1994	1,691,100	1,071,600	469,900	149,700	675	1,438,500	891,500	406,600	140,400	574
1995	1,723,800	1,081,000	482,400	160,400	683	1,467,500	899,600	417,300	150,500	582
1996	1,754,100	1,089,700	492,800	171,500	691	1,494,500	907,400	426,200	160,900	589
1997	1,781,700	1,096,300	501,800	183,700	697	1,519,700	913,400	434,000	172,300	595
1998	1,809,900	1,102,800	510,600	196,500	704	1,545,400	919,400	441,700	184,300	601
1999	1,836,200	1,107,500	518,500	210,100	710	1,569,700	923,800	448,700	197,100	607
2000	1,862,000	1,112,200	525,600	224,300	717	1,593,600	928,100	455,000	210,400	613

1/ Population data used for computation of nurse-population ratios is based on Series II projections from the Bureau of the Census, U.S. Department of Commerce as reported in Projections of the Population of the United States, 1977-2050, Series P-25, No. 704, July 1977.

Source: Estimates prepared by the Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Table 26 -- Projections of national active supply of registered nurses by educational preparation (Series C), 1980-2000

As of January 1	Total number of nurses					Full-time equivalencies				
	Total RNs 1/	AD/Dip.	Bacc.	Mas. & Doct.	RNs per 100,000 pop. 1/	Total RNs 1/	AD/Dip.	Bacc.	Mas. & Doct.	RNs per 100,000 pop. 1/
1980	1,119,100	833,500	232,500	53,100	506	945,700	692,200	203,800	49,700	428
1981	1,163,800	856,100	250,300	57,500	520	983,800	710,800	219,300	53,700	440
1982	1,202,700	873,500	267,200	61,900	532	1,016,400	724,700	233,800	58,000	450
1983	1,241,800	890,900	284,300	66,500	545	1,049,600	738,900	248,300	62,300	460
1984	1,278,300	905,300	300,800	72,100	555	1,080,500	750,600	262,400	67,600	469
1985	1,310,900	915,900	317,300	77,700	564	1,108,000	758,900	276,300	72,800	477
1986	1,343,500	925,500	334,100	83,800	573	1,135,800	766,800	290,500	78,600	484
1987	1,372,800	931,200	351,400	90,200	580	1,161,300	771,400	305,300	84,600	490
1988	1,402,300	937,000	368,300	97,000	587	1,187,000	776,400	319,600	91,000	497
1989	1,430,900	940,900	385,300	104,700	594	1,212,100	779,700	334,100	98,200	503
1990	1,458,100	943,100	402,400	112,500	600	1,235,900	781,600	348,800	105,500	509
1991	1,458,400	945,200	419,400	120,700	606	1,260,400	783,700	363,400	113,300	514
1992	1,511,900	945,200	436,900	129,700	612	1,284,600	784,300	378,600	121,700	520
1993	1,539,200	945,900	454,000	139,300	619	1,309,600	785,500	393,300	130,700	526
1994	1,565,900	945,400	470,900	149,600	625	1,334,300	785,800	408,100	140,400	532
1995	1,591,400	943,800	487,400	160,300	631	1,357,800	784,900	422,500	150,400	538
1996	1,616,400	940,900	504,100	171,400	637	1,381,200	783,300	437,100	160,800	544
1997	1,639,500	935,600	520,400	183,600	642	1,403,300	779,700	451,300	172,300	549
1998	1,663,100	930,400	536,300	196,400	647	1,425,700	776,200	465,300	184,300	555
1999	1,685,600	923,700	551,800	210,100	652	1,447,400	771,300	479,000	197,100	560
2000	1,707,800	917,000	566,600	224,300	657	1,468,700	766,300	492,000	210,400	565

1/ Population data used for computation of nurse-population ratios is based on Series II projections from the Bureau of the Census, U.S. Department of Commerce as reported in Projections of the Population of the United States, 1977-2050, Series P-25, No. 704, July 1977.

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Table 27. -- Projections of national active supply of registered nurses by educational preparation (Series D), 1980-2000

As of January 1	Total number of nurses					Full-time equivalencies				
	Total RNs 1/	AD/Dip.	Bacc.	Mas. & Doct.	RNs per 100,000 pop. 1/	Total RNs 1/	AD/Dip.	Bacc.	Mas. & Doct.	RNs per 100,000 pop. 1/
1980	1,119,100	833,500	232,500	53,100	506	945,700	692,200	203,800	49,700	428
1981	1,163,800	856,100	250,300	57,400	520	983,800	710,800	219,300	53,600	440
1982	1,202,600	873,500	267,500	61,600	532	1,016,300	724,700	234,000	57,100	450
1983	1,241,200	890,900	284,300	66,000	544	1,049,000	738,900	248,300	61,800	460
1984	1,276,700	905,400	300,000	71,200	555	1,078,900	750,700	261,500	66,700	469
1985	1,307,400	916,200	314,800	76,400	563	1,104,700	759,200	273,900	71,600	475
1986	1,337,100	926,200	328,900	82,000	570	1,129,800	767,300	285,600	76,900	482
1987	1,362,300	932,400	342,200	87,800	575	1,151,400	772,400	296,600	82,300	486
1988	1,386,000	939,100	353,200	93,700	580	1,171,600	778,100	305,600	87,900	490
1989	1,407,400	944,100	362,900	100,400	584	1,190,100	782,400	313,600	94,200	494
1990	1,426,800	947,800	372,000	107,000	587	1,206,800	785,400	321,000	100,400	497
1991	1,445,900	951,400	380,700	113,800	590	1,223,700	788,800	328,200	106,800	499
1992	1,464,000	953,100	389,700	121,100	593	1,240,400	790,800	335,900	113,700	502
1993	1,482,300	955,500	398,000	128,800	596	1,257,200	793,400	342,900	120,900	505
1994	1,500,000	956,900	406,200	136,800	599	1,273,800	795,300	350,100	128,400	508
1995	1,514,500	957,100	412,300	145,100	600	1,287,500	795,900	355,400	128,700	510
1996	1,526,900	956,600	417,000	153,300	601	1,299,600	796,200	359,500	143,900	512
1997	1,536,700	954,000	420,400	162,300	601	1,309,800	794,900	362,300	152,300	513
1998	1,546,200	951,800	423,000	171,500	602	1,319,600	793,700	365,000	161,000	513
1999	1,554,400	948,100	425,100	181,200	601	1,328,500	791,300	367,200	170,000	514
2000	1,562,200	944,600	426,600	191,000	601	1,336,800	788,800	368,800	179,300	515

1/ Population data used for computation of nurse-population ratios is based on Series II projections from the Bureau of Census, U.S. Department of Commerce as reported in Projections of the Population of the United States, 1977-2050, Series P-25, No. 704, July 1977.

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Table 28. -- Projected active supply of registered nurses in each State and region (Series A & B), January 1990 and 2000

	Series A								Series B							
	1990				2000				1990				2000			
State and region	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/
United States	1,467,600	604	1,241,500	511	1,666,000	641	1,423,000	548	1,542,600	635	1,307,800	538	1,862,000	717	1,593,600	613
New England	119,300	882	92,400	683	134,800	940	108,100	756	121,600	899	95,900	709	147,700	1,030	119,000	830
Connecticut	29,200	894	22,400	685	34,800	1,035	27,100	807	30,600	936	23,500	719	38,600	1,150	30,200	898
Maine	7,600	601	6,100	479	8,600	614	6,900	494	7,900	627	6,300	500	9,400	677	7,600	545
Massachusetts	56,500	880	44,600	695	63,200	930	51,000	751	57,500	896	45,500	710	67,600	995	54,800	807
New Hampshire	9,400	943	7,600	760	11,500	1,041	9,400	852	9,700	974	7,800	787	12,600	1,139	10,300	932
Rhode Island	9,600	919	7,700	740	10,900	979	8,900	806	10,500	1,006	8,400	812	12,900	1,166	10,700	961
Vermont	5,000	934	4,000	748	5,800	1,004	4,800	819	5,400	1,000	4,300	803	6,600	1,139	5,400	927
Middle Atlantic	245,800	622	202,400	512	256,800	638	213,900	531	259,400	656	214,100	542	287,400	714	239,600	595
New Jersey	48,700	611	38,100	478	51,500	616	41,100	491	52,300	656	41,000	514	60,000	714	47,500	568
New York	112,000	576	94,400	486	114,300	581	97,100	494	118,900	612	100,500	517	128,600	654	109,600	558
Pennsylvania	85,100	702	69,900	577	91,000	744	75,700	619	88,200	727	72,600	599	98,800	808	82,500	675
South Atlantic	228,200	537	196,500	463	262,900	554	229,900	484	242,700	571	209,500	493	298,300	629	259,100	546
Delaware	6,200	956	5,100	791	7,100	1,038	6,000	875	6,500	1,007	5,400	835	7,900	1,158	6,700	977
District of Columbia	10,200	1,569	9,100	1,404	11,500	1,850	10,400	1,670	10,900	1,685	9,800	1,033	13,700	2,199	12,400	1,988
Florida	68,300	563	59,300	489	86,100	605	75,000	527	71,000	586	61,700	509	94,000	660	81,900	575
Georgia	19,600	320	17,700	289	19,900	292	18,300	269	22,200	363	20,100	328	25,100	368	23,000	338
Maryland	34,600	705	28,300	577	40,600	751	33,700	624	36,500	743	29,900	609	45,500	861	37,800	699
North Carolina	28,600	437	25,100	383	31,600	440	29,800	388	30,000	459	26,400	404	35,400	493	31,200	434
South Carolina	16,900	491	15,000	434	18,400	478	16,300	426	18,900	548	16,700	485	22,500	587	20,000	522
Virginia	31,900	524	26,600	437	36,100	545	30,300	458	33,400	549	28,000	460	40,100	605	33,800	509
West Virginia	11,900	608	10,300	524	11,600	561	10,100	489	13,300	676	11,500	584	14,100	685	12,300	596
East South Central	79,000	511	70,400	456	94,100	569	84,200	509	84,900	550	74,600	483	105,500	638	94,400	571
Alabama	19,700	479	17,700	429	23,200	528	20,900	475	21,500	522	19,300	469	27,200	620	24,500	559
Kentucky	20,100	511	17,300	439	24,100	566	20,900	489	21,300	542	18,300	466	27,000	633	23,300	547
Mississippi	13,600	523	12,600	482	16,500	602	15,200	555	14,700	563	13,500	519	18,800	686	17,400	635
Tennessee	25,600	534	22,800	476	30,300	588	27,200	528	26,300	549	23,500	489	32,500	631	29,200	567

Table 28. -- Projected active supply of registered nurses in each State and region (Series A & B), January 1990 and 2000 -- Continued

State and region	Series A								Series B							
	1990				2000				1990				2000			
	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/
West South Central	110,500	440	98,800	393	130,000	471	116,700	423	119,200	474	106,500	423	151,300	548	136,100	493
Arkansas	6,800	277	6,100	247	7,300	273	6,500	244	7,400	299	6,600	266	8,100	341	7,300	272
Louisiana	17,800	420	15,800	372	18,600	418	16,700	374	19,300	455	17,100	404	22,100	495	19,800	443
Oklahoma	13,000	412	11,600	365	15,100	440	13,400	391	14,000	442	12,400	392	17,200	504	15,400	449
Texas	72,900	477	65,300	428	89,000	522	80,100	469	78,500	516	70,400	461	103,900	609	93,600	548
East North Central	273,100	638	233,200	545	305,800	693	263,500	597	281,400	657	240,900	563	334,800	759	289,400	656
Illinois	65,400	564	54,500	469	68,600	579	57,600	486	68,800	592	57,400	494	76,200	643	64,200	542
Indiana	38,700	695	31,800	572	43,400	763	36,600	643	41,100	738	33,900	608	49,600	872	41,800	736
Michigan	54,400	557	44,000	450	62,200	616	50,900	504	52,300	535	42,400	434	64,600	640	53,200	528
Ohio	77,300	725	74,000	694	88,900	809	84,800	773	80,500	756	77,100	724	96,900	883	92,600	844
Wisconsin	37,300	720	28,900	558	42,700	776	33,700	612	38,700	748	30,100	582	47,500	862	37,600	683
West North Central	125,500	697	101,400	563	138,100	736	112,300	598	132,400	736	106,900	594	154,400	822	125,900	671
Iowa	19,000	631	15,400	509	19,600	631	15,900	513	20,100	666	16,200	539	22,000	708	18,000	578
Kansas	15,300	629	12,800	527	16,800	667	14,300	566	16,100	663	13,500	557	18,800	744	15,900	632
Minnesota	38,000	880	29,000	678	44,300	976	34,700	766	39,900	924	30,800	714	49,200	1,086	38,700	854
Missouri	31,100	609	26,000	508	33,700	635	28,300	534	32,500	637	27,200	532	37,300	703	31,400	592
Nebraska	10,500	609	8,500	490	11,100	602	9,000	489	10,900	629	8,800	507	12,100	658	9,900	536
North Dakota	6,100	884	5,000	716	7,200	998	5,800	801	6,600	954	5,400	775	8,200	1,132	6,600	911
South Dakota	5,500	768	4,400	606	5,400	735	4,300	585	6,300	871	5,000	688	6,800	923	5,400	734
Mountain	81,400	633	71,200	554	98,200	671	86,400	590	86,300	671	75,300	585	110,700	757	97,300	665
Arizona	18,500	570	17,900	552	21,300	562	20,700	545	19,700	606	19,000	587	24,000	632	23,300	613
Colorado	28,800	848	24,400	718	35,900	926	30,600	791	30,200	889	25,600	755	40,300	1,042	34,500	893
Idaho	5,700	542	4,700	443	6,400	541	5,300	448	6,100	580	5,000	474	7,300	612	6,000	505
Montana	2,600	292	2,100	235	2,400	243	1,900	197	2,700	301	2,200	242	2,600	270	2,100	219
Nevada	4,300	544	3,900	486	5,300	591	4,800	530	4,500	565	4,000	505	5,800	647	5,200	579
New Mexico	9,700	665	8,500	583	13,000	800	11,500	705	10,200	698	89,900	612	14,400	886	12,700	781
Utah	8,600	555	7,100	457	10,100	573	8,400	478	9,600	615	7,900	507	12,000	680	10,000	566
Wyoming	3,200	675	2,600	554	3,800	732	3,200	606	3,300	706	2,700	581	4,300	815	3,500	674
Pacific	206,800	622	175,900	529	245,300	681	209,800	582	216,200	650	184,000	553	272,000	755	232,900	646
Alaska	4,000	815	3,400	700	5,000	924	4,300	800	4,200	859	3,600	739	5,700	1,061	5,000	917
California	144,200	577	123,600	495	170,300	628	146,600	541	150,200	601	128,900	516	187,200	690	161,400	595
Hawaii	9,700	899	9,000	829	12,000	1,016	11,100	937	10,200	945	9,400	871	13,700	1,153	12,600	1,063
Oregon	21,700	786	17,500	633	27,200	891	22,000	723	22,500	813	18,200	663	29,700	973	24,100	789
Washington	27,200	694	22,400	572	30,800	745	25,800	623	29,100	744	24,000	614	35,700	864	29,800	721

1/ Population data used for computation of nurse-population ratios is based on Series II-B projections from the Bureau of Census, U.S. Department of Commerce as reported in Illustrative Projections of State Populations by Age, Race, and Sex: 1975 to 2000, Series P-25, No. 796, March 1979.

Source: Estimates prepared by the Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Note: FTE = full-time equivalent

Table 29. -- Projected active supply of registered nurses in each State and region (Series C & D), January 1990 and 2000

State and region	Series C								Series D							
	1990				2000				1990				2000			
	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/
United States	1,458,100	600	1,235,900	509	1,707,800	657	1,468,700	565	1,426,800	587	1,206,800	497	1,562,200	601	1,336,800	514
New England	117,600	869	92,900	687	139,700	974	113,200	789	115,400	853	90,900	672	128,500	895	103,400	720
Connecticut	29,300	895	22,500	689	36,100	1,073	28,400	845	28,700	877	22,000	672	33,100	983	25,900	769
Maine	7,600	602	6,100	481	8,700	627	7,100	508	7,500	591	6,000	471	8,100	582	6,500	469
Massachusetts	56,600	881	44,800	698	64,900	955	52,900	778	55,800	870	44,100	687	60,900	897	49,300	726
New Hampshire	9,300	938	7,500	758	11,700	1,060	9,600	872	9,200	920	7,400	741	10,800	976	8,800	800
Rhode Island	9,800	943	7,900	764	12,200	1,102	10,200	919	9,300	898	7,500	724	10,200	918	8,400	760
Vermont	5,000	935	4,100	751	6,100	1,055	5,000	863	4,900	911	3,900	729	5,400	938	4,500	766
Middle Atlantic	244,000	617	201,600	510	262,800	653	221,300	550	238,200	603	196,300	497	240,400	608	200,900	519
New Jersey	47,100	591	36,900	463	51,200	612	41,200	493	46,300	582	36,300	455	48,000	574	38,500	460
New York	111,000	571	94,000	483	116,700	593	100,300	510	107,700	554	90,800	467	104,500	531	89,100	453
Pennsylvania	85,900	709	70,700	584	94,900	776	79,800	653	84,200	695	69,200	571	87,900	719	73,300	600
South Atlantic	223,000	525	192,300	453	262,300	552	228,800	482	219,200	516	188,800	445	242,700	511	210,700	444
Delaware	6,300	972	5,200	806	7,500	1,097	6,400	932	6,100	942	5,100	780	6,800	990	5,700	837
District of Columbia	10,700	1,645	9,600	1,009	13,500	2,170	12,300	1,967	10,100	1,554	9,000	951	11,000	1,764	9,900	1,594
Florida	66,500	549	57,700	477	83,100	584	72,500	509	66,000	545	57,300	473	79,500	559	69,300	486
Georgia	18,200	298	16,500	271	19,600	287	18,200	267	17,800	291	16,100	263	17,300	254	16,000	235
Maryland	33,700	687	27,600	563	40,400	747	33,800	625	33,400	681	27,300	557	38,100	704	31,700	588
North Carolina	28,400	435	25,000	382	32,100	447	28,400	396	28,000	428	24,600	375	29,700	414	26,200	373
South Carolina	16,100	468	14,300	414	18,300	476	16,400	427	15,700	456	13,900	403	16,600	431	14,800	385
Virginia	31,900	523	26,700	438	37,200	562	31,500	475	31,100	511	26,000	426	33,900	512	28,500	430
West Virginia	11,200	571	9,700	494	10,600	516	9,300	453	11,000	560	9,500	484	9,800	477	8,600	417
East South Central	78,600	509	70,200	456	95,200	575	85,500	517	77,000	498	68,500	443	87,400	528	78,400	474
Alabama	20,200	491	18,200	441	25,500	581	23,100	526	19,300	467	17,300	419	21,700	494	19,600	445
Kentucky	19,300	491	16,600	422	22,700	532	19,700	462	19,200	488	16,500	419	21,700	509	18,800	441
Mississippi	13,700	527	12,700	486	17,000	621	15,800	575	13,300	510	12,200	470	15,300	559	14,200	517
Tennessee	25,400	530	22,700	473	30,000	582	26,900	524	25,200	527	22,500	470	28,700	559	25,800	502

Table 29. -- Projected active supply of registered nurses in each State and region (Series C & D), January 1990 and 2000 -- Continued

State and region	Series C								Series D							
	1990				2000				1990				2000			
	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/	Total RNs	RNs per 100,000 pop. 1/	FTE RNs	RNs per 100,000 pop. 1/
West South Central	112,600	448	100,700	401	143,400	519	129,400	469	107,800	429	96,300	383	122,600	443	110,100	399
Arkansas	6,800	274	6,000	244	7,500	281	6,800	253	6,600	266	5,900	237	6,800	255	6,100	229
Louisiana	18,100	426	16,100	379	21,100	472	19,000	426	17,300	408	15,300	362	17,700	396	15,800	355
Oklahoma	13,200	418	11,700	371	16,100	470	14,400	420	12,700	403	11,300	357	14,200	414	12,600	369
Texas	74,500	488	66,900	438	98,700	579	89,200	523	71,200	466	63,800	418	83,900	492	75,600	443
East North Central	271,300	634	232,000	542	311,300	706	270,000	612	266,200	622	227,300	531	287,700	652	248,500	563
Illinois	64,700	557	54,000	465	69,600	587	59,100	499	63,200	545	52,700	454	63,700	538	53,700	453
Indiana	37,600	676	31,000	557	43,400	762	36,900	648	37,300	669	30,700	551	40,600	713	34,400	604
Michigan	55,000	563	44,600	456	65,000	645	53,700	532	53,600	548	43,300	443	59,100	586	48,500	480
Ohio	76,600	719	73,300	688	88,700	808	84,800	772	75,300	706	72,000	676	83,100	757	79,300	722
Wisconsin	37,400	722	29,100	562	44,600	809	35,500	645	36,800	712	28,600	552	41,200	747	32,600	592
West North Central	125,700	698	100,900	560	143,300	763	117,800	627	122,400	680	98,700	548	130,100	693	106,100	565
Iowa	19,300	639	15,100	518	20,800	668	17,100	549	18,700	621	15,100	502	18,700	600	15,200	489
Kansas	15,500	638	13,000	536	17,600	700	15,100	597	15,000	619	12,600	519	16,000	633	13,600	538
Minnesota	37,800	876	29,200	677	45,700	1,009	36,300	800	37,000	856	28,500	659	41,700	920	32,900	725
Missouri	30,800	603	25,700	504	34,100	642	28,800	543	30,200	591	25,200	493	31,400	591	26,400	498
Nebraska	10,700	618	8,600	499	11,600	632	9,500	517	10,400	604	8,400	486	10,600	575	8,600	468
North Dakota	6,300	905	5,100	736	7,900	1,089	6,400	881	6,000	868	4,900	702	6,900	953	5,600	765
South Dakota	5,300	743	4,200	589	5,600	762	4,600	616	5,100	711	4,000	561	4,800	642	3,800	514
Mountain	80,700	627	70,600	549	101,400	693	89,500	612	79,300	616	69,300	539	92,900	635	81,600	558
Arizona	17,900	553	17,400	535	21,300	563	20,700	546	17,700	547	17,200	530	20,000	527	19,400	511
Colorado	29,200	860	24,800	730	38,700	1,000	33,300	861	28,500	839	24,100	710	34,600	893	29,600	764
Idaho	5,500	525	4,500	429	6,300	530	5,200	440	5,500	518	4,500	423	5,900	498	4,900	413
Montana	2,500	287	2,100	231	2,400	245	1,900	199	2,500	283	2,000	228	2,200	224	1,800	182
Nevada	4,300	540	3,800	483	5,400	594	4,800	533	4,300	535	3,800	478	5,100	562	4,500	504
New Mexico	9,700	665	8,500	584	13,400	825	11,900	731	9,500	653	8,300	572	12,400	762	10,900	673
Utah	8,400	539	6,900	445	9,900	560	8,300	471	8,200	529	6,800	436	9,000	508	7,500	426
Wyoming	3,200	682	2,600	562	4,000	773	3,400	643	3,100	666	2,600	547	3,700	701	3,000	581
Pacific	204,400	615	174,000	523	248,400	689	213,500	593	201,200	605	171,100	515	230,200	639	197,200	547
Alaska	4,100	834	3,500	717	5,600	1,041	4,900	901	4,000	808	3,400	694	4,900	899	4,200	778
California	142,700	571	122,400	490	171,900	634	148,700	548	140,400	562	120,300	481	159,500	588	137,500	507
Hawaii	9,700	899	9,000	829	12,800	1,082	11,800	998	9,500	881	8,800	812	11,500	972	10,600	897
Oregon	21,600	780	17,400	636	27,500	901	22,300	733	21,400	774	17,200	630	26,000	852	21,100	692
Washington	26,300	670	21,700	554	30,600	740	25,800	624	25,900	662	21,400	546	28,300	685	23,800	576

1/ Population data used for computation of nurse-population ratios is based on Series II-B projections from the Bureau of Census, U.S. Department of Commerce as reported in Illustrative Projections of State Populations by Age, Race, and Sex: 1975 to 2000, Series P-25, No. 796, March 1979.

Source: Estimates prepared by the Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Note: FTE = full-time equivalent

Table 30. --Estimated active supply of registered nurses in each State and region by educational preparation (Series A), January 1980

State and region	Total employed					Full-time equivalent				
	Total RNs 1/	AD & Dip.	Bacca-laureate	Master's & Doct.	RNs per 100,000 pop. 2/	FTE RNs 1/	AD & Dip.	Bacca-laureate	Master's & Doct.	RNs per 100,000 pop. 2/
United States	1,119,100	833,500	232,500	53,100	506	945,700	692,200	203,800	49,700	428
New England	90,900	67,390	18,870	4,590	728	71,400	51,580	15,670	4,220	572
Connecticut	20,900	15,050	5,100	760	670	16,000	11,260	4,100	690	514
Maine	6,300	5,200	920	130	562	5,000	4,090	780	120	448
Massachusetts	46,300	34,940	8,530	2,820	779	36,400	26,640	7,160	2,580	612
New Hampshire	6,600	5,040	1,430	160	768	5,400	4,030	1,210	150	625
Rhode Island	7,100	4,610	1,910	530	738	5,600	3,510	1,620	500	589
Vermont	3,700	2,550	980	190	762	3,000	2,050	800	180	621
Middle Atlantic	217,800	166,120	40,060	11,680	569	179,100	132,960	35,270	10,860	468
New Jersey	39,800	31,410	7,080	1,310	534	31,200	24,110	5,970	1,150	419
New York	106,000	77,530	21,490	7,020	558	88,900	63,360	19,000	6,540	468
Pennsylvania	72,000	57,180	11,490	3,350	610	59,000	45,490	10,300	3,170	499
South Atlantic	164,800	126,700	29,890	8,180	453	142,500	108,330	26,550	7,700	392
Delaware	4,600	3,580	830	180	767	3,800	2,890	730	170	634
District of Columbia	7,200	3,850	2,120	1,190	1,051	6,400	3,380	1,910	1,110	940
Florida	43,800	34,710	7,660	1,420	459	38,300	30,160	6,790	1,320	401
Georgia	16,900	12,390	3,190	1,320	320	15,200	11,020	2,890	1,280	288
Maryland	23,900	17,880	4,500	1,550	552	19,700	14,370	3,870	1,440	454
North Carolina	22,300	17,410	4,110	780	387	19,600	15,140	3,720	730	340
South Carolina	12,700	9,980	2,150	550	421	11,200	8,710	1,960	530	372
Virginia	23,700	18,340	4,420	970	447	19,900	15,130	3,870	910	375
West Virginia	9,700	8,560	920	220	529	8,400	7,370	810	210	458
East South Central	53,300	39,960	10,880	2,450	380	47,500	35,250	9,950	2,340	338
Alabama	12,800	9,200	2,890	680	340	11,500	8,160	2,670	630	306
Kentucky	14,000	10,380	2,940	720	397	12,100	8,830	2,630	680	344
Mississippi	8,700	6,710	1,590	390	361	8,000	6,150	1,490	390	333
Tennessee	17,800	13,670	3,460	660	410	15,900	12,110	3,160	640	366

Table 30. --Estimated active supply of registered nurses in each State and region by educational preparation (Series A), January 1980 -- Continued

State and region	Total employed					Full-time equivalent				
	Total RNs 1/	AD & Dip.	Bacca-laureate	Master's & Doct.	RNs per 100,000 pop. 2/	FTE RNs 1/	AD & Dip.	Bacca-laureate	Master's & Doct.	RNs per 100,000 pop. 2/
West South Central	77,400	52,700	21,490	3,210	350	69,200	46,580	19,570	3,070	313
Arkansas	5,800	4,560	1,050	170	261	5,100	4,020	960	160	232
Louisiana	13,500	9,340	3,770	410	350	12,000	8,130	3,440	390	305
Oklahoma	9,400	6,730	2,460	190	331	8,300	5,930	2,220	190	294
Texas	48,700	32,070	14,210	2,440	371	43,800	28,500	12,950	2,330	333
East North Central	209,200	161,020	39,350	8,900	508	178,500	135,590	34,640	8,420	433
Illinois	54,800	41,620	10,440	2,710	489	45,600	33,900	9,160	2,560	407
Indiana	27,600	20,560	5,720	1,310	517	22,700	16,550	4,920	1,270	426
Michigan	42,400	32,790	7,870	1,770	460	34,400	26,100	6,700	1,630	372
Ohio	56,900	46,610	8,550	1,700	532	54,500	44,590	8,260	1,660	294
Wisconsin	27,500	19,440	6,770	1,410	582	21,300	14,450	5,600	1,300	452
West North Central	97,800	74,480	19,750	3,610	578	7,900	59,140	16,550	3,310	467
Iowa	15,900	12,570	2,800	480	552	12,800	9,940	2,360	460	444
Kansas	12,500	9,710	2,400	370	539	10,500	8,060	2,090	350	454
Minnesota	28,600	20,370	6,700	1,480	713	22,100	15,280	5,440	1,350	551
Missouri	23,500	18,610	3,790	1,110	488	19,700	15,470	3,250	1,000	409
Nebraska	8,700	6,800	1,790	130	545	7,000	5,340	1,510	120	440
North Dakota	4,300	3,090	1,200	10	663	3,500	2,480	1,000	10	540
South Dakota	4,400	3,300	1,070	30	643	3,500	2,570	900	20	509
Mountain	55,400	37,840	14,590	2,860	519	48,400	32,650	13,070	2,730	454
Arizona	13,200	9,290	3,070	870	518	12,900	9,000	3,000	860	503
Colorado	18,500	11,580	5,730	1,170	657	15,700	9,560	5,070	1,090	559
Idaho	4,200	3,500	630	90	475	3,400	2,840	520	90	388
Montana	2,900	1,880	940	50	366	2,300	1,480	780	50	293
Nevada	2,800	2,040	650	60	418	2,500	1,820	600	60	374
New Mexico	5,400	3,720	1,500	180	435	4,800	3,210	1,380	170	383
Utah	6,100	4,100	1,630	360	462	5,000	3,330	1,350	340	381
Wyoming	2,200	1,730	440	80	553	1,800	1,410	370	70	455
Pacific	152,500	107,220	37,590	7,660	514	129,800	90,090	32,570	7,060	437
Alaska	2,400	1,230	1,050	110	581	2,100	1,050	910	100	502
California	108,500	78,720	24,540	5,200	487	92,900	66,610	21,470	4,800	417
Hawaii	5,900	3,650	1,980	320	634	5,500	3,350	1,820	300	584
Oregon	14,600	10,010	4,130	430	601	11,900	8,070	3,400	400	490
Washington	21,100	13,610	5,890	1,600	580	17,400	11,010	4,970	1,460	479

1/ Figures may not add to totals because of rounding.

2/ Population data used for computation of nurse-population ratios is based on Series IIB projections from the Bureau of the Census, U.S. Department of Commerce as reported in Illustrative Projections of State Populations by Age, Race and Sex: 1975 to 2000, Series P-25, No. 796, March 1979.

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, Department of Health and Human Services, 1981.

Table 31. --Projected active supply of registered nurses in each State and region by educational preparation (Series A), January 1990 and 2000.

	1990					2000				
	Total employed					Total employed				
State and region	Total RNs 1/	AD & Dip.	Bacca-laureate	Master's & Doct.	RNs per 100,000 pop. 2/	Total RNs 1/	AD & Dip.	Bacca-laureate	Master's & Doct.	RNs per 100,000 pop. 2/
United States	1,467,600	988,600	377,980	107,010	604	1,666,000	1,048,920	426,010	191,040	641
New England	119,300	77,800	29,440	10,030	882	134,800	82,640	33,790	17,310	940
Connecticut	29,200	18,900	8,590	1,730	894	34,800	20,910	10,660	3,220	1,035
Maine	7,600	5,680	1,740	180	759	8,600	6,030	2,230	300	614
Massachusetts	56,500	39,170	10,540	6,750	880	663,200	40,860	9,840	12,500	930
New Hampshire	9,400	6,320	2,810	260	943	11,500	7,190	3,840	470	1,041
Rhode Island	9,600	4,860	3,870	830	919	10,900	4,700	4,810	1,350	979
Vermont	5,000	2,870	1,890	280	934	5,800	2,950	2,410	470	1,004
Middle Atlantic	245,800	173,610	53,070	19,080	622	256,800	171,270	53,530	31,970	638
New Jersey	48,700	35,460	11,000	2,210	611	51,500	34,180	13,530	3,810	616
New York	112,000	75,590	24,790	11,580	576	114,300	74,400	20,460	19,440	581
Pennsylvania	85,100	62,560	17,280	5,290	702	91,000	62,690	19,540	8,720	744
South Atlantic	228,100	159,850	49,920	18,340	537	262,900	172,570	57,030	33,330	554
Delaware	6,200	4,270	1,570	360	956	7,100	4,580	1,890	640	1,038
District of Columbia	10,200	4,050	3,430	2,690	1,569	11,500	4,220	2,500	4,800	1,850
Florida	68,300	50,670	14,740	2,840	563	86,200	61,100	19,880	5,200	605
Georgia	19,500	12,390	3,040	4,120	320	19,900	10,480	1,580	7,820	292
Maryland	34,600	23,370	7,850	3,370	705	40,600	24,740	9,740	6,110	751
North Carolina	28,600	20,550	6,420	1,630	437	31,600	21,930	6,770	2,910	440
South Carolina	16,900	12,090	3,670	1,170	491	18,400	12,120	4,120	2,120	478
Virginia	31,900	22,530	7,580	1,790	524	36,100	24,210	8,820	3,100	545
West Virginia	11,900	9,930	1,620	370	608	11,500	9,190	1,730	630	561
East South Central	79,000	54,770	18,880	5,400	511	94,100	63,550	20,860	9,700	569
Alabama	19,700	11,880	6,350	1,490	479	23,200	13,620	6,870	2,690	528
Kentucky	20,100	14,440	4,440	1,230	511	24,100	16,900	5,150	2,090	566
Mississippi	13,600	10,010	2,580	1,040	523	16,500	12,220	2,440	1,850	602
Tennessee	25,600	18,440	5,510	1,640	534	30,300	20,810	6,400	3,070	588

Table 31. --Projected active supply of registered nurses in each State and region by educational preparation (Series A), January 1990 and 2000. -- Continued

State and region	1990 Total employed					2000 Total employed				
	Total RNs 1/	AD & Dip.	Bacca-laureate	Master's & Doct.	RNs per 100,000 pop. 2/	Total RNs 1/	AD & Dip.	Bacca-laureate	Master's & Doct.	RNs per 100,000 pop. 2/
West South Central	110,500	63,240	39,660	7,680	440	130,000	67,930	47,700	14,360	471
Arkansas	6,800	4,840	1,400	590	277	7,300	4,640	1,370	1,270	273
Louisiana	17,800	9,760	7,170	870	420	18,600	8,770	8,280	1,580	418
Oklahoma	13,000	8,300	4,300	430	412	15,100	9,240	5,040	770	440
Texas	72,900	40,340	26,790	5,790	477	89,000	45,280	33,010	10,740	522
East North Central	273,100	192,040	62,930	19,040	638	305,800	201,520	71,740	32,610	593
Illinois	65,400	46,790	13,970	4,670	564	68,600	46,910	13,790	7,920	579
Indiana	38,700	25,470	10,310	2,920	695	43,400	25,070	12,950	5,430	763
Michigan	54,400	37,540	12,800	5,000	557	62,200	40,600	14,010	7,590	616
Ohio	77,300	59,200	14,400	3,680	725	88,900	64,740	17,350	6,760	809
Wisconsin	37,300	23,040	11,450	2,770	720	42,700	24,200	13,640	4,910	776
West North Central	125,500	86,940	31,870	6,890	697	138,100	90,530	35,880	11,740	736
Iowa	19,000	13,730	4,470	830	631	19,600	13,530	4,670	1,400	631
Kansas	15,300	10,710	3,870	700	629	16,800	11,150	4,430	1,240	667
Minnesota	38,000	24,600	10,470	2,910	880	44,300	26,870	12,240	5,150	976
Missouri	31,100	22,850	6,300	1,910	609	33,700	23,370	7,030	3,300	635
Nebraska	10,500	7,520	2,680	330	609	11,100	7,500	2,990	590	998
North Dakota	6,100	4,010	2,100	10	884	7,200	4,980	2,240	20	998
South Dakota	5,500	3,520	1,980	20	768	5,400	3,130	2,280	40	735
Mountain	81,400	48,860	26,470	6,140	633	98,200	53,710	33,450	11,170	671
Arizona	18,500	11,450	5,340	1,690	570	21,300	11,430	6,870	3,010	562
Colorado	28,800	15,370	10,570	2,880	848	35,900	17,560	13,000	5,290	926
Idaho	5,700	4,340	1,230	160	542	6,400	4,540	1,610	280	541
Montana	2,600	1,300	1,210	90	292	2,400	980	1,240	140	243
Nevada	4,300	2,930	1,310	90	544	5,300	3,470	1,720	150	591
New Mexico	9,700	6,100	3,290	310	665	13,000	7,730	4,730	540	800
Utah	8,600	5,240	2,590	800	555	10,100	5,610	3,050	1,460	573
Wyoming	3,200	2,130	930	120	675	3,800	2,390	1,230	200	732
Pacific	206,800	131,500	59,850	15,500	622	245,300	145,240	72,060	27,980	681
Alaska	4,000	1,590	2,170	230	815	5,000	1,780	2,800	430	924
California	144,200	96,200	37,560	10,440	577	170,300	107,390	44,030	18,840	628
Hawaii	9,700	5,100	3,960	670	899	12,000	5,630	5,190	1,210	1,016
Oregon	21,700	13,530	7,390	820	786	27,200	15,850	9,840	1,490	891
Washington	27,200	15,080	8,770	3,340	694	30,800	14,590	10,200	6,010	745

1/ Figures may not add to totals because of rounding.

2/ Population data used for computation of nurse-population ratios is based on Series IIB projections from the Bureau of the Census, U.S. Department of Commerce as reported in Illustrative Projections of State Populations by Age, Race and Sex: 1975 to 2000, Series P-25, No. 796, March 1979.

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, Department of Health and Human Services, 1981.

Table 32. -- Projected number of practical nursing graduates, academic years 1974-75 through 1999-2000

Academic year	Series I	Series II
1974-75 [1]	45,375	45,375
1975-76 [1]	47,145	47,145
1976-77 [1]	46,614	46,614
1977-78 [1]	45,350	45,350
1978-79 [1]	44,235	44,235
1979-80	42,300	42,300
1980-81	41,500	41,500
1981-82	40,800	40,800
1982-83	39,300	39,300
1983-84	38,000	38,000
1984-85	36,600	36,600
1985-86	35,200	35,200
1986-87	35,200	33,900
1987-88	35,100	32,600
1988-89	35,000	31,400
1989-90	34,800	30,000
1990-91	34,400	28,500
1991-92	33,900	27,200
1992-93	33,400	25,800
1993-94	32,900	24,500
1994-95	32,400	23,200
1995-96	32,000	22,100
1996-97	31,600	21,000
1997-98	31,300	20,000
1998-99	31,200	19,200
1999-2000	31,100	18,500

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[1] Actual data reported by the National League for Nursing for graduates of United States schools only.

Source: National League for Nursing, State-Approved Schools of Nursing - LPN, Annual editions, 1976-1980.

Estimates prepared by the Division of Health Professions Analysis, Health Resources Administration, Department of Health and Human Services, 1981.

Table 33.-- Projections of national active supply of licensed practical nurses, 1980-2000

As of January 1	Series I				Series II			
	Total Number of nurses	FTEs	Total nurses per 100,000 pop. 1/	FTEs per 100,000 pop. 1/	Total number of nurses	FTEs	Total nurses per 100,000 pop. 1/	FTEs per 100,000 pop. 1/
1980	549,300	480,100	248	217	549,300	480,100	248	217
1981	564,500	493,100	252	220	564,500	493,100	252	220
1982	578,900	505,700	256	224	578,900	505,700	256	224
1983	592,700	517,800	260	227	592,700	517,800	260	227
1984	605,400	528,800	263	230	605,400	528,800	263	230
1985	617,100	539,100	266	232	617,100	539,100	266	232
1986	627,800	548,400	268	234	627,800	548,400	268	234
1987	637,500	557,200	269	235	637,500	557,200	269	235
1988	647,300	565,700	271	237	646,300	564,900	271	236
1989	657,100	574,600	273	238	654,300	572,200	271	237
1990	666,900	583,200	274	240	661,500	578,500	272	238
1991	676,600	592,100	276	242	667,900	584,100	273	238
1992	686,200	600,400	278	243	673,400	588,900	273	238
1993	695,500	608,600	280	245	678,200	593,400	273	238
1994	704,600	616,900	281	246	682,200	596,900	272	238
1995	713,500	624,600	283	248	685,500	599,900	272	238
1996	722,100	631,800	284	249	688,200	601,800	271	237
1997	733,500	639,200	286	250	690,400	603,700	270	236
1998	738,800	646,100	287	251	692,000	605,200	269	235
1999	747,100	653,300	289	253	693,400	606,000	268	234
2000	755,400	660,200	291	254	694,500	606,300	267	233

1/ Population data used for computation of nurse-population ratios is based on Series II projections from the Bureau of the Census, U.S. Department of Commerce, as reported in Projections of the Population of the United States, 1977 to 2050, Series P-25, No. 704, July 1977.

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Note: FTE = Full-time equivalent.

Table 34. -- Projected active supply of licensed practical nurses in each State and region (Series I), selected years, 1980-2000

State and region	1980 Total LPNs	1980 LPNs per 100,000 pop. 1/	1980 FTE LPNs	1980 LPNs per 100,000 pop. 1/	1990 Total LPNs	1990 LPNs per 100,000 pop. 1/	1990 FTE LPNs	1990 LPNs per 100,000 pop. 1/	2000 Total LPNs	2000 LPNs per 100,000 pop. 1/	2000 FTE LPNs	2000 LPNs per 100,000 pop. 1/
United States	549,300	249	480,100	218	660,900	274	583,200	240	755,400	291	660,200	254
New England	306,000	245	25,100	201	30,400	225	24,800	183	28,800	201	23,100	161
Connecticut	7,000	203	5,700	183	7,500	188	6,100	186	7,400	219	5,700	148
Maine	2,600	231	2,100	187	2,900	228	2,300	185	2,900	209	2,300	168
Massachusetts	14,800	249	12,200	206	13,300	207	11,000	171	11,800	174	9,700	143
New Hampshire	2,000	231	1,600	190	2,400	238	1,900	195	2,600	233	2,100	190
Rhode Island	2,600	275	2,100	220	2,500	238	2,000	190	2,300	210	1,800	167
Vermont	1,600	335	1,400	279	1,800	329	1,500	274	1,800	302	1,500	251
Middle Atlantic	96,000	251	82,500	216	106,100	268	90,700	229	115,600	287	98,300	244
New Jersey	26,000	349	22,100	296	41,600	522	35,300	443	58,400	698	49,300	589
New York	46,200	243	39,500	208	44,800	231	38,200	197	40,600	206	34,500	175
Pennsylvania	23,800	202	20,900	176	19,700	162	17,200	142	16,600	136	14,500	118
South Atlantic	84,700	233	75,500	208	113,700	268	101,500	239	139,300	294	124,700	263
Delaware	1,100	191	1,000	165	1,400	213	1,200	183	1,500	223	1,300	191
District of Columbia	2,300	342	2,100	316	1,900	289	1,700	266	1,600	258	1,500	237
Florida	18,600	200	16,200	170	23,500	194	20,500	169	26,700	187	23,200	163
Georgia	19,700	372	18,100	343	34,500	565	31,800	520	52,200	768	48,000	706
Maryland	6,600	153	5,900	136	7,300	148	6,500	131	7,400	138	6,600	122
North Carolina	12,300	214	10,600	184	14,800	226	12,600	193	15,700	219	13,400	187
South Carolina	7,600	253	6,900	230	10,700	311	9,700	282	13,000	339	11,800	307
Virginia	12,300	231	10,900	206	14,900	244	13,200	217	16,200	244	14,400	217
West Virginia	4,200	228	3,800	206	4,700	242	4,300	219	5,000	242	4,500	219
East South Central	41,100	293	37,800	269	51,700	335	47,500	307	61,000	369	55,900	338
Alabama	11,100	296	10,400	277	12,100	294	11,300	274	12,000	273	11,200	254
Kentucky	7,000	197	6,400	180	8,400	214	7,700	196	9,200	216	8,400	197
Mississippi	4,700	197	4,300	179	4,300	166	3,900	151	3,700	136	3,400	123
Tennessee	18,300	420	16,700	385	26,900	562	24,600	513	36,100	701	32,900	640

Table 34 . -- Projected active supply of licensed practical nurses in each State and region (Series I), selected years, 1980-2000 -- Continued

State and region	1980				1990				2000			
	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/
West South Central	67,000	303	60,900	276	82,400	328	74,600	297	91,600	332	82,800	300
Arkansas	7,200	327	6,500	295	9,300	372	8,400	341	10,500	394	9,500	355
Louisiana	10,900	277	9,500	243	15,300	360	13,300	314	18,400	412	16,000	358
Oklahoma	7,800	275	7,200	253	11,200	353	10,200	324	13,800	402	12,600	368
Texas	41,100	313	37,700	287	46,600	305	42,700	279	48,900	286	44,700	262
East North Central	87,000	211	72,000	175	93,500	219	79,200	185	93,600	212	79,000	179
Illinois	13,800	123	12,000	107	11,700	101	10,200	88	10,500	89	9,100	77
Indiana	10,000	187	6,600	229	12,100	218	10,400	187	12,700	224	10,900	191
Michigan	23,700	257	20,000	216	27,300	279	22,900	234	28,500	283	23,900	237
Ohio	28,500	267	24,500	230	29,100	273	25,000	235	27,600	252	23,700	216
Wisconsin	11,000	234	8,900	188	13,300	257	10,700	206	14,300	260	11,400	208
West North Central	43,300	256	36,900	218	49,800	277	42,400	236	51,700	275	43,900	234
Iowa	7,800	273	6,600	229	8,900	296	7,500	248	9,000	289	7,500	241
Kansas	4,600	197	4,100	178	5,300	220	4,800	199	5,700	225	5,100	203
Minnesota	11,600	290	9,300	231	12,500	289	9,900	229	11,900	263	9,400	208
Missouri	11,400	238	10,100	210	12,900	254	11,400	224	13,800	259	12,100	228
Nebraska	4,600	289	4,000	251	6,200	357	5,400	310	7,100	389	6,200	336
North Dakota	1,800	280	1,500	237	2,300	338	2,000	285	2,500	340	2,100	286
South Dakota	1,500	222	1,300	190	1,700	234	1,400	200	1,700	231	1,500	197
Mountain	23,600	221	20,400	191	29,900	232	26,000	202	34,200	234	29,600	202
Arizona	5,400	210	4,700	185	7,700	238	6,800	209	9,600	253	8,400	221
Colorado	5,700	203	4,900	175	6,400	188	5,500	162	6,700	173	5,700	148
Idaho	2,600	292	2,200	253	3,000	286	2,600	247	3,200	272	2,800	235
Montana	1,800	228	1,600	202	1,700	191	1,500	169	1,500	159	1,400	140
Nevada	1,500	221	1,300	201	1,800	226	1,600	206	2,000	220	1,800	200
New Mexico	2,700	217	2,400	193	3,600	244	3,200	217	4,100	250	3,600	221
Utah	3,200	245	2,700	206	4,800	306	4,000	257	6,100	343	5,100	287
Wyoming	700	172	600	150	900	187	800	163	1,000	187	800	162
Pacific	76,400	257	66,900	225	109,600	330	96,500	290	139,700	388	122,900	341
Alaska	1,000	152	600	134	1,000	199	900	176	1,300	246	1,200	216
California	61,100	274	54,000	242	92,900	372	81,900	328	122,300	451	107,600	397
Hawaii	2,300	240	2,100	229	3,000	274	2,800	261	3,500	295	3,300	281
Oregon	4,000	165	3,400	142	4,200	151	3,600	131	4,100	133	3,500	114
Washington	8,000	219	6,800	188	8,500	218	7,300	187	8,500	206	7,300	176

1/ Population data used for computation of nurse-population ratios is based on Series II-B projections from the Bureau of the Census, U.S. Department of Commerce as reported in Illustrative Projections of State Populations by Age, Race and Sex: 1975 to 2000, Series P-25, No. 796, March 1979.

Source: Estimates prepared by the Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Note: FTE = full-time equivalent. Because of rounding, figures may not add to total.

Table 35. -- Projected active supply of licensed practical nurses in each State and region (Series II), selected years, 1980-2000

	1980				1990				2000			
State and region	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/
United States	549,300	249	480,100	218	661,500	272	578,500	238	694,500	267	606,300	233
New England	306,000	245	25,100	201	30,200	223	24,100	178	26,200	183	21,300	148
Connecticut	7,000	224	5,700	183	7,400	226	5,500	161	6,700	199	5,400	161
Maine	2,600	231	2,100	187	2,900	226	2,300	183	2,600	190	2,100	153
Massachusetts	14,800	249	12,200	206	13,200	206	10,900	169	10,700	158	8,800	129
New Hampshire	2,000	231	1,600	190	2,400	236	1,900	194	2,400	219	2,000	179
Rhode Island	2,600	275	2,100	220	2,500	237	2,000	190	2,200	199	1,700	158
Vermont	1,600	335	1,400	279	1,800	326	1,500	271	1,600	274	1,300	227
Middle Atlantic	98,000	251	82,500	216	105,300	266	89,900	227	106,400	264	90,200	224
New Jersey	26,000	349	22,100	296	41,500	520	35,100	441	56,100	671	47,300	566
New York	46,200	243	39,500	208	44,300	228	37,800	194	35,700	181	30,200	154
Pennsylvania	23,800	202	20,800	176	19,500	161	17,000	140	14,600	119	12,700	104
South Atlantic	84,700	233	75,500	208	112,900	266	100,700	237	129,600	273	115,800	244
Delaware	1,100	191	1,000	165	1,400	211	1,200	182	1,400	200	1,200	172
Discrict of Columbia	2,300	342	2,100	316	1,900	288	1,700	265	1,500	242	1,400	222
Florida	18,600	195	16,200	170	23,200	192	20,300	167	23,700	166	20,600	145
Georgia	19,700	372	18,100	343	34,400	562	31,600	518	50,100	737	46,000	677
Maryland	6,600	153	5,900	136	7,200	147	6,400	131	6,900	128	6,100	113
North Carolina	12,300	214	10,600	184	14,700	224	12,500	192	14,500	202	12,400	172
South Carolina	7,600	253	6,900	230	10,700	309	9,700	280	12,300	321	11,100	290
Virginia	12,300	231	10,900	206	14,700	242	13,100	215	14,800	223	13,100	198
West Virginia	4,200	228	3,800	206	4,700	239	4,200	217	4,400	212	3,900	191
East South Central	41,100	293	37,800	269	51,400	337	47,300	306	57,500	348	52,600	318
Alabama	11,100	296	10,400	277	12,000	292	11,200	272	10,900	249	10,200	231
Kentucky	7,000	197	6,400	180	8,400	213	7,700	195	8,600	198	7,800	183
Mississippi	4,700	197	4,300	179	4,200	163	3,900	148	3,100	112	2,800	101
Nennessee	18,300	420	16,700	385	26,800	560	24,500	512	34,900	678	31,800	618

Table 35. -- Projected active supply of licensed practical nurses in each State and region (Series II), selected years, 1980-2000 -- Continued

	1980				1990				2000			
State and region	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/	Total LPNs	LPNs per 100,000 pop. 1/	FTE LPNs	LPNs per 100,000 pop. 1/
West South Central	67,000	303	60,900	276	81,600	325	73,900	294	82,400	298	74,400	269
Arkansas	7,200	327	6,500	295	9,200	374	8,300	337	9,200	346	8,300	311
Louisiana	10,900	277	9,500	243	15,100	356	13,200	311	16,600	371	14,400	323
Oklahoma	7,800	275	7,200	253	11,100	350	10,100	321	12,600	367	11,500	335
Texas	41,100	313	37,700	287	46,200	302	42,300	277	44,000	258	40,200	236
East North Central	87,000	211	72,000	175	92,800	217	78,500	183	85,300	193	71,700	163
Illinois	13,800	123	12,000	107	11,600	100	10,100	87	9,200	77	7,900	67
Indiana	10,000	187	8,600	161	12,000	216	10,300	185	11,600	205	9,900	175
Michigan	23,700	257	20,000	216	27,100	277	22,700	233	26,500	262	22,100	219
Ohio	28,500	267	24,500	230	28,900	271	24,800	233	25,200	230	21,600	197
Wisconsin	11,000	234	8,900	188	13,200	254	10,600	204	12,800	232	10,200	185
West North Central	43,300	256	36,900	218	49,200	273	41,900	233	45,400	242	38,400	205
Iowa	7,800	273	6,600	229	8,800	293	7,400	245	7,900	254	6,600	212
Kansas	4,600	197	4,100	178	5,300	217	4,800	196	5,000	198	4,500	179
Minnesota	11,600	290	9,300	231	12,300	286	9,800	227	10,600	233	8,300	183
Missouri	11,400	238	10,100	210	12,800	251	11,300	221	12,000	226	10,500	198
Nebraska	4,600	289	4,000	251	6,100	354	5,300	307	6,500	355	5,600	306
North Dakota	1,800	280	1,500	237	2,300	331	1,900	279	2,000	275	1,700	231
South Dakota	1,500	222	1,300	190	1,600	229	1,400	196	1,400	191	1,200	163
Mountain	23,600	221	20,400	191	29,600	230	25,800	201	31,100	213	27,000	185
Arizona	5,400	210	600	134	7,700	236	6,700	207	8,800	231	7,700	202
Colorado	5,700	203	4,900	175	6,300	186	5,500	161	6,000	156	5,200	134
Idaho	2,600	292	2,200	253	3,000	284	2,600	246	3,000	257	2,600	221
Montana	1,800	228	1,600	202	1,700	189	1,500	167	1,400	141	1,200	124
Nevada	1,500	221	1,300	201	1,800	224	1,600	205	1,900	205	1,700	187
New Mexico	2,700	217	2,400	193	3,500	241	3,100	214	3,600	221	3,200	195
Utah	3,200	245	2,700	206	4,700	303	4,000	255	5,500	312	4,600	260
Wyoming	700	172	600	150	900	186	800	162	900	174	800	150
Pacific	76,400	257	66,900	225	108,800	327	96,000	296	130,700	362	114,500	318
Alaska	600	152	600	134	1,000	199	900	175	1,300	238	800	150
California	61,100	274	54,000	242	92,300	369	81,400	326	114,900	424	101,000	372
Hawaii	2,300	240	2,100	229	2,900	272	2,800	259	3,200	272	3,100	258
Oregon	4,000	165	3,400	142	4,100	150	3,600	128	3,700	120	3,100	103
Washington	8,000	219	6,800	188	8,500	216	7,300	185	7,600	185	6,500	158

1/ Population data used for computation of nurse-population ratios is based on Series II-B projections from the Bureau of the Census, U.S. Department of Commerce, as reported in Illustrative Projections of State Populations by Age, Race and Sex: 1975 to 2000, Series P-25, No. 796, March 1979.

Source: Estimates prepared by the Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services, 1981.

Note: FTE = full-time equivalent. Because of rounding, figures may not add to total.

Table 36 . -- Projected requirements for total registered nurses and full-time equivalent registered nurses from historical trend-based model, 1980-2000

As of January 1	Total registered nurses	Full-time equivalent
1980	1,105,200	951,000
1981	1,145,000	985,400
1982	1,184,800	1,019,800
1983	1,222,000	1,051,800
1984	1,258,400	1,083,200
1985	1,293,100	1,113,100
1986	1,325,600	1,141,000
1987	1,355,700	1,167,000
1988	1,386,100	1,193,000
1989	1,416,500	1,219,200
1990	1,447,000	1,245,400
1991	1,477,500	1,271,600
1992	1,507,900	1,297,700
1993	1,538,200	1,323,700
1994	1,568,500	1,349,600
1995	1,598,500	1,375,400
1996	1,628,500	1,401,000
1997	1,658,300	1,426,600
1998	1,688,000	1,452,000
1999	1,717,700	1,477,500
2000	1,747,400	1,502,900

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, Department of Health and Human Services, 1981.

Table 37 . -- Projected requirements of full-time equivalent registered nurses from historical trend-based model, by area of practice, 1980-2000

Area of practice	As of January 1				
	1980	1985	1990	1995	2000
Total	951,000	1,113,100	1,245,400	1,375,400	1,502,900
Hospital	668,260	796,500	899,920	1,000,750	1,099,340
Nursing home	72,050	83,370	93,330	103,130	112,680
Nursing education	36,310	42,120	47,100	52,020	56,840
Community health	87,630	95,790	101,100	106,220	111,280
Physician's office	56,830	65,220	71,890	78,230	83,970
Other	29,890	30,080	32,020	35,050	38,800

Note: Detail may not add to totals.

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, Department of Health and Human Services, 1981.

Table 38. -- Projected requirements for full-time equivalent registered nurses in each State and region based on historical trend-based model, 1985 and 1990

State and region	1985	1990
United States	1,113,100[1]	1,245,400[1]
New England	75,600	82,000
Connecticut	17,600	19,700
Maine	6,100	6,800
Massachusetts	36,300	38,300
New Hampshire	5,900	6,700
Rhode Island	6,400	6,900
Vermont	3,300	3,600
Middle Atlantic	199,000	214,900
New Jersey	33,400	37,500
New York	103,100	111,300
Pennsylvania	62,500	66,100
South Atlantic	171,800	198,000
Delaware	4,200	4,500
District of Columbia	6,900	7,700
Florida	47,200	55,700
Georgia	19,600	23,000
Maryland	21,200	24,000
North Carolina	24,900	28,600
South Carolina	14,100	16,000
Virginia	23,400	26,600
West Virginia	10,300	11,900
East South Central	55,900	65,400
Alabama	12,400	14,500
Kentucky	14,700	17,100
Mississippi	9,700	11,600
Tennessee	19,100	22,200
West South Central	77,500	90,600
Arkansas	5,500	6,600
Louisiana	13,700	15,700
Oklahoma	10,000	11,500
Texas	48,300	56,800
East North Central	197,800	216,100
Illinois	48,800	53,300
Indiana	24,100	27,000
Michigan	33,300	36,200
Ohio	67,800	73,500
Wisconsin	23,800	26,100
West North Central	94,900	105,600
Iowa	16,000	17,800
Kansas	12,300	13,600
Minnesota	28,300	31,200
Missouri	22,800	25,700
Nebraska	8,000	8,900
North Dakota	3,900	4,400
South Dakota	3,600	4,000
Mountain	58,700	67,100
Arizona	17,500	20,000
Colorado	18,400	21,400
Idaho	3,900	4,400
Montana	3,000	3,400
Nevada	2,900	3,400
New Mexico	4,800	5,500
Utah	5,900	6,500
Wyoming	2,300	2,500
Pacific	145,200	157,200
Alaska	2,700	3,100
California	105,400	113,600
Hawaii	6,200	6,900
Oregon	13,300	14,500
Washington	17,600	19,100

[1] Because of methodology of developing national and State data, sum of States does not equal national totals.

Source: Estimates prepared by Division of Health Professions Analysis, Health Resources Administration, Department of Health and Human Services, 1981.

Table 39. -- Projected requirements for full-time equivalent nursing personnel, according to criteria-based model by field of employment, 1990

Field of employment	Lower bound			Upper bound		
	RNs	LPNs	Aides	RNs	LPNs	Aides
Total 1/	1,784,400	331,000	524,000	2,372,700	333,700	589,100
Hospitals	935,700	100,800	231,400	1,323,100	87,700	257,000
Nursing homes	469,900	208,000	269,700	526,000	231,100	300,500
Nursing education	37,000	--	--	47,800	--	--
Community health	240,500	2,000	22,600	367,900	--	31,300
Physician's office	66,700	20,000	--	73,400	14,700	--
Other	33,700	--	--	33,700	--	--

1/ Figures may not add to totals because of rounding.

Source: Prepared by Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services from criteria presented in Figure 3.

Table 40. -- Projected requirements for full-time equivalent registered nurses according to criteria-based model, by educational preparation, 1990

	Lower bound					Upper bound				
State and region	Total	AD & Dip.	Bacc.	Mast.	Doct.	Total	AD & Dip.	Bacc.	Mast.	Doct.
United States	1,784,420	767,670	747,500	255,730	13,490	2,372,750	834,250	1,165,090	350,250	23,090
New England	97,480	41,670	38,580	16,300	920	131,960	45,440	63,540	21,520	1,470
Connecticut	26,590	11,640	11,120	3,620	210	35,000	12,690	17,080	4,860	370
Maine	9,140	3,810	3,600	1,680	40	12,320	4,130	5,980	2,140	70
Massachusetts	43,080	18,550	16,370	7,630	530	59,840	20,230	28,670	10,160	790
New Hampshire	7,800	3,330	3,240	1,190	40	10,280	3,640	5,000	1,560	80
Rhode Island	7,030	2,960	2,830	1,160	80	9,490	3,250	4,540	1,580	130
Vermont	3,840	1,380	1,420	1,020	20	5,030	1,500	2,270	1,220	30
Middle Atlantic	305,040	135,770	127,600	39,190	2,470	409,520	148,010	202,050	55,260	4,200
New Jersey	57,960	26,480	24,070	7,120	290	78,260	28,710	39,000	10,020	530
New York	159,970	70,430	68,090	19,890	1,560	211,060	76,860	103,450	28,060	2,690
Pennsylvania	87,110	38,860	35,440	12,180	620	120,200	42,440	59,600	17,180	980
South Atlantic	278,840	121,650	116,060	39,120	2,000	378,580	132,130	188,470	54,680	3,290
Delaware	4,240	1,940	1,630	620	40	5,970	2,090	2,950	870	60
District of Columbia	7,260	3,360	2,680	1,040	180	10,210	3,560	4,950	1,450	250
Florida	72,920	32,240	30,480	9,880	320	100,580	34,890	50,990	14,160	530
Georgia	48,130	20,650	20,820	6,260	400	62,880	22,480	31,090	8,580	730
Maryland	32,470	14,790	13,460	3,950	270	44,210	16,070	22,020	5,670	450
North Carolina	37,560	15,570	15,080	6,600	310	51,780	16,860	25,530	8,940	450
South Carolina	18,490	7,620	7,870	2,880	120	25,470	8,400	12,810	4,060	200
Virginia	41,550	18,180	17,480	5,620	270	55,630	19,880	27,430	7,850	470
West Virginia	16,220	7,300	6,560	2,270	90	21,850	7,900	10,700	3,100	150
East South Central	126,340	55,540	52,490	17,340	970	167,110	60,120	81,650	23,700	1,640
Alabama	33,990	14,940	14,280	4,500	280	44,940	16,190	22,050	6,230	470
Kentucky	28,330	12,070	11,820	4,250	190	37,500	13,040	18,380	5,760	330
Mississippi	20,380	8,700	8,380	3,090	200	26,890	9,400	13,000	4,170	320
Tennessee	43,640	19,830	18,010	5,500	300	57,780	21,490	28,220	7,540	520

Table 40. -- Projected requirements for full-time equivalent registered nurses according to criteria-based model, by educational preparation, 1990 - Continued

State and region	Lower bound					Upper bound				
	Total	AD & Dip.	Bacc.	Mast.	Doct.	Total	AD & Dip.	Bacc.	Mast.	Doct.
West South Central	204,190	87,680	87,870	27,190	1,450	265,250	95,370	130,010	37,190	2,690
Arkansas	26,010	11,570	11,300	2,980	150	33,030	12,560	16,120	4,030	320
Louisiana	33,720	14,580	14,340	4,560	240	44,450	15,970	21,720	6,330	440
Oklahoma	20,360	8,160	8,490	3,560	160	27,070	8,880	13,210	4,730	250
Texas	124,100	53,370	53,740	16,090	900	160,700	57,960	78,960	22,100	1,680
East North Central	358,270	157,630	151,010	47,010	2,620	470,250	171,440	229,420	64,680	4,720
Illinois	99,310	44,450	41,430	12,720	710	131,280	48,110	64,300	17,610	1,260
Indiana	45,980	20,310	19,380	5,950	340	60,440	22,110	29,560	8,160	610
Michigan	76,170	33,110	32,630	9,850	580	99,880	36,230	48,880	13,710	1,070
Ohio	89,880	39,780	37,290	12,200	610	118,950	43,190	58,040	16,660	1,060
Wisconsin	46,930	19,980	20,280	6,290	380	59,700	21,800	28,640	8,540	720
West North Central	166,340	72,290	68,500	24,350	1,200	217,160	78,340	104,520	32,190	2,090
Iowa	29,110	12,420	12,030	4,430	230	37,560	13,550	17,850	5,770	400
Kansas	24,470	10,630	10,160	3,510	160	31,800	11,630	15,290	4,580	300
Minnesota	38,550	16,770	15,950	5,530	310	50,030	18,140	24,000	7,340	540
Missouri	42,350	18,950	17,230	5,930	250	57,010	20,370	28,150	8,080	410
Nebraska	17,680	7,630	7,460	2,460	130	22,450	8,300	10,660	3,230	250
North Dakota	7,550	3,220	3,010	1,240	70	9,770	3,490	4,540	1,620	110
South Dakota	6,630	2,670	2,660	1,250	50	8,540	2,860	4,030	1,570	80
Mountain	82,160	33,510	35,630	12,400	620	108,520	36,530	53,890	16,990	1,080
Arizona	16,630	6,730	7,200	2,560	140	22,880	7,310	11,670	3,680	220
Colorado	30,230	12,980	13,330	3,680	240	38,480	14,170	18,850	4,990	470
Idaho	5,220	1,990	2,260	950	20	7,000	2,170	3,500	1,290	40
Montana	7,480	2,960	3,200	1,260	60	9,440	3,230	4,470	1,630	100
Nevada	4,510	1,830	1,930	720	30	6,160	1,990	3,120	1,010	50
New Mexico	8,020	3,200	3,370	1,400	50	10,980	3,490	5,500	1,910	70
Utah	7,530	2,860	3,240	1,360	70	10,180	3,110	5,090	1,860	110
Wyoming	2,540	960	1,100	470	10	3,400	1,060	1,690	620	20
Pacific	165,760	61,930	69,760	32,830	1,240	224,400	66,870	111,540	44,040	1,910
Alaska	2,130	750	980	390	10	2,940	830	1,530	550	20
California	117,890	42,790	49,650	24,630	820	160,100	45,850	80,070	32,950	1,230
Hawaii	6,150	2,500	2,550	1,060	40	8,260	2,740	4,040	1,400	70
Oregon	14,450	5,600	5,980	2,750	120	19,420	6,190	9,350	3,690	180
Washington	25,140	10,290	10,600	4,000	250	33,680	11,260	16,550	5,450	410

Note: Figures may not add to totals because of rounding.

Source: Prepared by Division of Health Professions Analysis, Health Resources Administration. U.S. Department of Health and Human Services, from criteria presented in Figure 3.

Table 41. -- Projected requirements for licensed practical nurses and nursing aides in each State and region according to criteria-based model, 1990

State and region	LPN Upper bound	LPN Lower bound	Aides Upper bound	Aides Lower bound
United States	333,690	331,000	589,080	524,100
New England	15,630	15,940	30,530	26,950
Connecticut	5,740	5,570	9,700	8,580
Maine	1,100	1,170	2,420	2,090
Massachusetts	5,250	5,710	12,220	10,800
New Hampshire	1,670	1,610	2,730	2,380
Rhode Island	1,370	1,370	2,490	2,240
Vermont	500	510	970	860
Middle Atlantic	61,080	60,640	109,200	97,840
New Jersey	10,390	10,610	19,270	17,300
New York	37,380	36,270	62,380	55,980
Pennsylvania	13,310	13,760	27,550	24,560
South Atlantic	42,590	43,840	84,270	74,810
Delaware	390	460	1,060	970
District of Columbia	610	680	1,590	1,390
Florida	8,020	8,910	19,000	16,890
Georgia	10,380	10,000	17,240	15,230
Maryland	5,850	5,930	10,770	9,580
North Carolina	3,780	4,200	9,090	8,020
South Carolina	2,780	2,840	5,820	5,130
Virginia	8,180	8,130	14,730	13,160
West Virginia	2,600	2,690	4,970	4,440
East South Central	23,310	23,360	41,350	37,120
Alabama	6,460	6,450	11,420	10,300
Kentucky	4,860	4,860	8,670	7,650
Mississippi	3,660	3,680	6,370	5,720
Tennessee	8,330	8,370	14,890	13,450

Table 41. -- Projected requirements for licensed practical nurses and nursing aides in each State and region according to criteria-based model, 1990 - Continued

State and region	LPN Upper bound	LPN Lower bound	Aides Upper bound	Aides Lower bound
West South Central	45,120	43,550	73,380	65,490
Arkansas	6,750	6,430	10,310	9,230
Louisiana	7,460	7,210	12,540	11,110
Oklahoma	3.130	3,150	5,930	5,290
Texas	27,780	26,760	44,600	39,860
East North Central	78,680	76,580	130,740	116,560
Illinois	20,360	20,090	34,740	31,080
Indiana	9,970	9,740	16,740	14,980
Michigan	17,860	17,160	29,100	25,750
Ohio	17,330	17,140	30,630	27,280
Wisconsin	13,160	12,450	19,530	17,470
West North Central	34,240	33,640	57,660	51,960
Iowa	6,550	6,350	10,850	9,790
Kansas	5,630	5,420	9,350	8,380
Minnesota	8,440	8,290	13,690	12,420
Missouri	6,050	6,290	11,990	10,750
Nebraska	4,790	4,560	7,220	6,500
North Dakota	1,610	1,580	2,640	2,400
South Dakota	1,170	1,150	1,920	1,720
Mountain	16,250	15,730	26,680	23,200
Arizona	2,190	2,220	4,320	3,660
Colorado	8,240	7,790	12,120	10,700
Idaho	690	710	1,290	1,110
Montana	1,880	1,780	2,810	2,510
Nevada	540	550	1,110	930
New Mexico	1,240	1,220	2,300	1,950
Utah	1,090	1,080	2,010	1,710
Wyoming	380	380	720	630
Pacific	16,790	17,750	35,270	30,140
Alaska	360	320	600	470
California	8,590	9,670	20,600	17,430
Hawaii	1,240	1,180	2,020	1,730
Oregon	2,340	2,380	4,440	3,920
Washington	4,260	4,200	7,610	6,590

Source: Prepared by Division of Health Professions Analysis, Health Resources Administration, U.S. Department of Health and Human Services from criteria presented in Figure 3.

Appendix 3.

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